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November 20, 1930

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SEE PAGE 20

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## CONSTRUCTION COMPANY
PITTSBURGH, PA.

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# STEEL

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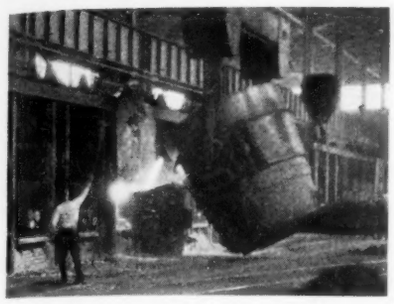

New plant now pouring steel at the door of Detroit automotive industry. Page 43.

## THIS WEEK:

*FANCY the effect in the automotive industry of a new Ford car, equipped with a light 8-cylinder, V-type motor, selling at less than $1000! Remote as such an event might have appeared a few months ago the fact is it now is confidently expected. Those in a position to know believe an announcement regarding the new car will be made before spring. The first inkling of Ford's intention to compete in the medium-price field was contained in* STEEL'S *Mirrors of Motordom news several weeks ago; today the car is nearer an actuality, as reported on Page 32. Those who have seen the motor say it embodies radically new features.*

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## STEEL-SERVICE

Volume 87 Number 21

STEEL

*For forty-eight years*—IRON TRADE REVIEW

PRODUCTION ◆ PROCESSING ◆ DISTRIBUTION ◆ USE

# This Week in Steel

STEEL is becoming more calm—the optimists would describe it as tranquil and the pessimists as inert—as the year wears on. To continued mediocre demand for its products the next six weeks, which quite likely will be accentuated over the holidays, the industry is resigned. But a majority, not large but growing larger, increasingly regards the force of the depression as spent and appraises November and December as a corridor leading to certain improvement, probably by mid-January, and this long view of the situation is relieving the strain on sentiment. . . . Low stocks of consumers, which some producers believe will temper the inventory-period letdown in specifying, are encouraging. More important, however, is the campaign of most producers to strengthen prices. No steel producer followed last week's rocketing of the price of copper without an envious thought. Copper's performance undoubtedly was of great moral benefit to all industry. One maker of wire rope, for example, has booked the best business in months from customers who are also large buyers of copper.

## Nature's Mild Mood Aids Jobless

Seasonally clement weather, deferring winter's interruption of outdoor work, is softening the unemployment situation temporarily and also expanding the need for materials. The government continues to create jobs (Page 25). Individual steel producers and consumers are carrying most of their workers through, sometimes affording relief by means of loans, of which the International Harvester plant (Page 26) is typical.

## Sunday Off Also for Blast Furnaces?

In harmony with the distribution of work by the device of a shorter work week, one authority would put the blast furnace, a confirmed 7-day week addict, on a 6-day week basis where there is no continuous demand for gas (Page 23). This would eliminate the pigging of cold iron on Sundays and holidays and spread production more evenly, in consonance with the shorter work week of steelmaking capacity. With 199 of the country's 310 blast furnaces unemployed, the proposal may have merit.

## Ford V-Eight Is Believed Near

Ford will bring out a V-eight to sell under $1000, probably in the spring. Of this, the biggest news of the automobile world since Model A supplanted Model T, Detroit is rapidly becoming convinced (Page 32). It is no secret that Ford engineers have long been experimenting with an eight; certainly the $25,000,000 cur-

Typical of European construction is this lever-drawbridge by Demag's, of Duisburg, Germany, for the Kruisschans lock, Antwerp. The clear passage of this structure, requiring 540 tons of steel, is 115 feet. The movable lever arms are raised electrically in two minutes.

rent expansion of Ford capacity the country over at a time when foreign business is being diverted to foreign plants is not without significance. Ford will probably deny the report, but Detroit is pretty sure of its ground.

## Steel Plant Strategically Located

For the automobile industry this would be a revolutionary development. As the influence of Model A extends to the $1000 class, so a Ford eight undoubtedly would penetrate far above its price class. . . . For automotive suppliers of steel this may mean a realignment of outlets, but for the moment they have something else to worry about, and that is completion of the plant of the Great Lakes Steel Corp., subsidiary of the National Steel Corp., at Detroit. At the threshhold of the greatest steel market of the world, this maker of sheet bars, strip and bars has a commanding position in regard to price and delivery. Mechanically, the plant is impressive (Page 43), and it is not known that heretofore a blooming, billet and bar, and strip mill have been put under the same roof. . . . One advantage of Great Lakes' location is the availability of scrap. The scrap industry, rapidly acquiring a consciousness, is continuing its fight (Page 24) before the interstate commerce commission for freight rates based upon scrap's intrinsic worth and not a percentage of rates on finished steel.

## Talk Peace, but Prepare for War

While adherence to the world court may be sought at the coming session of congress, the war department at Washington is untiring in its program of planning for war production. An assistant secretary of war describes (Page 24) how the country has been divided into 14 districts, with "key" plants in these districts in position to swing into the manufacture of munitions immediately war is declared. . . . Welding undoubtedly will play an important role in the next war. Certain types of welds, notably one-side welds or welds in a complicated part, give rise to residual strains in the assembly which often cause warpage and other difficulties. Relieving these strains is accomplished by heating the welded part in a furnace and cooling. Structural parts and machine parts of welded construction are improved by this treatment (Page 62).

## Foresee Steel Leading Home Material

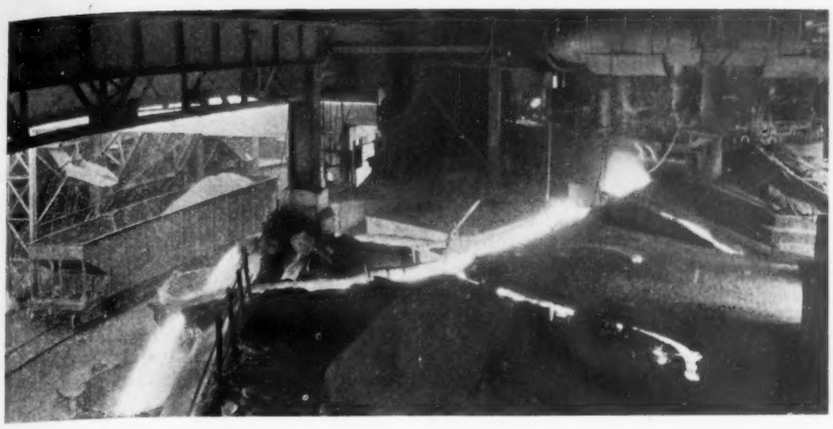
Within five years the majority of new residences will be of all-steel construction, was the prediction at the annual convention of the International Acetylene association in Chicago last week (Page 47). The average six-room home would require about 15,000 pounds of steel including metal lath, 800 linear feet of welding and 40 pounds of welding wire. All told, consumption of steel for residences would approximate 2,000,000 to 3,000,000 tons of steel annually. The oxyacetylene welding and cutting industry appears restless to go ahead—is on the threshhold of activities in new fields. . . . American Standards association proposes to revise its system of cylindrical fits (Page 68) to adapt theory more nearly to accepted practice in production metalworking plants, particularly in the direction of making the system workable with standard reamers and in connection with the use of cold-drawn and commercially-ground bar stock.

## An Idea Ahead of Its Day; «Holding On»

Lying on his back in a hospital a dozen years ago a mining engineer conceived the fantastic idea of pulverizing the iron-bearing granite hills of the eastern Mesabi, extracting the ore with magnets, selling millions of tons—and living happily. Other engineers pronounced him rational; capital fancied the venture, and the world's largest magnetic ore sintering plant was built to an engineering success. But owing to the abundance of natural ore and low prices the plant operated only a few years. The Mesabi Iron Co., holding on, increases its capital; reports of active negotiations for a sale are denied (Page 25) . . . Holding on, as the New York financiers have found expedient in this case, is the current job for most of us while "Business drifts aimlessly at a lower level" (Page 37) . . . The steel price stabilization plan is spreading; plates, bars and shapes were mentioned a week ago; this week it is sheets, strip and other light materials. A determined hand is being reached out against low prices; they shall not pass the deadline Jan. 1 (Page 77) . . . A thorough study of the elements in direct die-casting costs presages the purchase of auxiliary equipment (Page 55).

## No Secrets Left for Iron Alloys

A critical review of 2000 technical and scientific journals and a large number of books from 25 countries and written in ten languages is a nice evening's work for any reviewer; yet this is only the start of the extensive research into alloys of iron, covering alloys of iron with 39 elements and compounds, being undertaken by the Engineering Foundation, New York, in co-operation with 64 technical societies, industrial organizations and other groups. The purpose of this intensive literature review is to prepare a series of monographs dealing with the various iron alloys (Page 52). A large share of the work is being performed by the Battelle Memorial institute in Columbus, O., where members of the Ohio section of the American Institute of Mining and Metallurgical Engineers met last week (Page 23). . . . An unusually large number of men prominent in industry died the past week (Pages 30-33).



# Proposes 6-Day Week for Blast Furnace Operations

A SIX-DAY week for blast furnaces, where there is no continuous demand for gas, to prevent the pigging of cold iron on Sundays and holidays, keep down the surplus of pig iron and to put the production of pig iron more in consonance with steelmaking and foundry operations!

This was suggested by Ralph H. Sweetser, assistant to the vice chairman, American Rolling Mill Co., Columbus, O., at a meeting of the Ohio section of the American Institute of Mining and Metallurgical Engineers at Columbus, Nov. 14.

The meeting was held at the Battelle Memorial institute. Mr. Sweetser's observation were made in the course of a resume of old and new blast furnace practice. At present, only 111 of the country's 310 blast furnaces are in operation.

### Cites Practice at Chicago

Mr. Sweetser repeated the statement of a blast furnace operator in the Chicago district who declared that it was the usual practice at his plant to bank the furnaces for a day or so over holidays whenever there was no demand for the hot metal at the steel plant. He said that this prevented the piling up of cold pig, and no serious difficulty was found in shutting down and starting up the blast furnace, requiring only a little extra coke.

Mr. Sweetser explained at some length the design and operation of hot blast charcoal iron furnaces formerly of the old Hanging Rock region in Kentucky. One of these furnaces, termed at the time by newspapers as the "Latest addition to the charcoal iron industry," was 17 feet in height; bosh diameter 6 feet; tunnel-hold diameter 22 inches; and with one tuyere 2½ inches in diameter. Production while in blast averaged about 10 tons of molten iron daily. This was in sharp contrast to the modern blast furnace; plans for a contemplated unit calling for a daily production of 1600 tons of iron, Mr. Sweetser said.

Approximately 65 engineers from the Ohio district attended the meeting, celebrating the first birthday of the Battelle institute, dedicated to creative research in metallurgy and fuels. Distinguished guests were H. Foster Bain, secretary, and William H. Bassett, president, American Institute of Mining and Metallurgical Engineers.

Dr. Bain, recently returned from an extensive visit to Europe, described the part which minerals are playing in the economic rehabilitation of postwar Europe. Despite the throttling effect of politics on European industry, the tedious wrangling developed in cartels, small working capital, inferior railroad facilities and small plants, Dr. Bain saw the minerals industries there fundamentally sound and backed by ample natural resources and abundant technical skill.

Progress which has been made in the extensive alloys of iron research, instigated recently by the Engineering Foundation and sponsored by 64 trade associations, industries and other technical groups, was discussed by Dr. O. E. Harder, assistant director of the Battelle institute, which is co-operating with the bureau of standards, Carnegie Institute of Technology and Lehigh university in the preliminary study of this project. This preliminary work is largely bibliographical in nature, requiring the assimilation of all literature available on iron and iron alloys. Further detais of this research are outlined in the article on Page 52 of this issue.

### Inspect Research Facilities

Dr. H. W. Gillett, director of the Battelle institute, welcomed the delegates and told of the work in which the institute was engaged, mentioning briefly the Battelle family, whose generosity and devotion to research made possible the construction and equipping of the spacious and luxurious institute facilities.

Visiting engineers were conducted on inspection trips through the various laboratories of the building and the equipment explained in detail by members of the Battelle staff.

All types of testing equipment of the most modern and improved design are provided to carry on any sort of research in metallurgy, fuels and allied subjects. A staff of 65 is maintained at present, room being available for 200.

In operation only a year, expansion already is contemplated in the erection of an additional building on nearby property to house ore grinding and sampling equipment. No expense has been spared in outfitting the building, even down to a bindery shop where various periodicals received by the library are bound into volumes for filing.

Projects are undertaken by the institute at the request of a sponsor, those under way at the present time including a series of experiments on powdered fuels, exhaustive tests on a new type of automobile bearing material, creep tests on various grades of cast irons at elevated temperatures, and fatigue tests on various grades of steel.

*TENTH CARNEGIE SAFETY TROPHY*

*Carnegie Steel Co., Pittsburgh, has completed its 1931 trophy for competition in safety, the tenth it has offered. The central thought exemplified in this group is unity of purpose; the executive, superintendent and workman having a common aim in safety.*

# Wartime Production Program Is Patterned After Industries Board

PREPARATIONS the war department is making for the mobilization of American industry in the event of war were discussed by Frederick H. Payne, assistant secretary of war, before the convention of the American Hardware Manufacturers' association, Atlantic City, recently.

"Peace-minded as a people, we have never accumulated or maintained in time of peace large stocks of reserve munitions," said Mr. Payne. "Thus, the principal aims of industrial planning are (1) to reduce to a minimum the period between the declaration of an emergency and the time when industry can begin mass production of essential munitions, and (2) to develop such a system for the control of industry that every essential facility will be assured of adequate amounts of raw materials, power, money, labor and transportation."

**Districts Are Key to Plan**

The gist of the plan adopted by the war department lies in allotment to suitable industrial establishments in time of peace the task of initiating production promptly of specified amounts of essential items on outbreak of war. To provide for the desired distribution of this task, the country has been divided into 14 districts. War department representatives in the districts make sub-allotments to suitable plants. Ordinarily no plant is given a task involving more than 50 per cent of its normal output.

**Flexible Groups Maintained**

"Proposed organization is roughly patterned on the War Industries board of 1918," Mr. Payne continued, "and organizational plans are purposely kept very flexible in order that the wartime President will not be hampered in developing such detailed administrative machinery as he may desire to employ. Through the trade associations into which American industry has organized itself, the central organization will keep in close contact with conditions throughout the country.

"Our plans contemplate a control of industry by an appropriate industrial body appointed by the President and we do not contemplate a governmental possession of industrial establishments."

## Scrap Chapter for South

A chapter of the Institute of Scrap Iron and Steel Inc., New York, was formed Nov. 11 at a gathering of dealers at Atlanta, Ga. This chapter is the fourteenth to be formed and covers territory south of the Mason and Dixon line, as far west as Texas.

W. M. Smith, of W. M. Smith & Co., Birmingham, Ala., was elected temporary president, and J. B. Knight, of J. T. Knight & Son Inc., Columbus, Ga., vice president. The next meeting, to complete and make the organization permanent, will be held in Birmingham, Ala., in January, followed by a later meeting in New Orleans. The charter membership includes 17 firms, doing business in six states.

## 70 Per Cent Scrap Rate Applied in Kokomo Case

Although the interstate commerce commission has ruled that rates on steel and iron scrap from points in central and western trunk line territory to Kokomo, Ind., are to be 70 per cent of the basic scale of rates prescribed on iron and steel articles in the official classification, it disregarded the recommendation of the examiner in this case that this scale be applied throughout Central Freight association territory.

Inasmuch as scrap dealers and users, through a conference at Pittsburgh, opposed any set basis for relating rates on scrap to other steel commodities, this action by the commission indicates acceptance of their view. The new rates in the Kokomo case are to go into effect not later than Jan. 26, 1931.

Rehearing has been petitioned in the Newport News case, in which the 70 per cent differential first was applied. Scrap men are interested to observe the action of the commission in this appeal.

## Scrap Chapters Merge

Merger of the Philadelphia and Reading chapters of the Institute of Scrap Iron and Steel Inc., New York, was completed at a joint meeting of the two chapters Nov. 13. Because of a community of interest and because both chapters serve the same markets, it was unanimously voted to create a single unit for eastern Pennsylvania. The present administration of the Philadelphia chapter, headed by John R. Briggs, president, will continue in charge of the merged chapter until the next annual election. The institute will now consist of 13 chapters.

## Weirton Shape Mill Ready

Weirton Steel Co., Weirton, W. Va., will start operations at its new structural steel plant at Weirton, Dec. 15. This unit, which also will be used to

*—Wide World Photo*

*MAZE OF STEELWORK CANOPIES MILAN RAILROAD STATION*

*One of the largest stations on the Continent is being built in the Italian city, taking a tonnage of steel apparently far in excess of that used in some of the typical terminals erected in recent years in American cities. Note the peculiar construction of the framework for supporting the roof*

manufacture rails and tie plates, completes the company's $7,000,000 expansion program started last year. W. H. Scanlon, recently associated with W. J. Rainey Inc., has been placed in charge of the new bar and structural department at the Weirton company.

## Deny Plant Expansion

Chicago—Officials of the American Steel & Wire Co., subsidiary of the United States Steel Corp., deny the rumor that the company plans construction of a plant at Duluth. The report originated when officials of the company were in Duluth recently on an inspection trip.

Arrangements were made for a moderate increased production early next year for expected spring trade in wire and wire products. However, no plant expansion is planned.

Minnesota Steel Co., another subsidiary of the corporation, is the only existing plant at Duluth for the production of wire.

## Mesabi Iron Co. To Increase Stock; Sale Report Denied

Additional financing is being undertaken by the Mesabi Iron Co., which owns a large magnetic iron ore sintering plant at Babbitt, Minn., and controls a vast tonnage of low grade magnette at the eastern tip of the Mesabi.

A special meeting of stockholders has been called Dec. 3 in New York when they will be asked to approve an increase in the common share capitalization from 1,000,000 to 1,500,000. Of the present authorized 1,000,000 no par shares 780,267 have been issued. Stockholders of record Dec. 4 are offered the opportunity to subscribe for additional shares at $1 per share for each eight shares now held.

If the plan is approved the issue would call for 97,534 shares, making a total of 877,810 outstanding. There would still remain in the treasury 622,199 shares. Charles Hayden, New York, and Daniel C. Jackling, San Francisco, president, are reported to have agreed to purchase any stock not subscribed.

The company built its plant nine years ago, bringing to an engineering success experiments conducted for several years. The hard, rock-like material was quarried, crushed and ground to a fine powder; iron oxide separated by magnets, sintered and shipped as a high-grade "manufactured" ore. In all, 150,000 tons has been shipped, but due to low prices on standard grades of ore the plant has been idle several years.

The company has considered this a valuable property for the future of the steel industry. Recent reports heard in Duluth that it is negotiating to sell it to an Ohio steel company are denied by the latter.

# Decrease in Unemployment Seasonal; Weather "Aids" Idle

WASHINGTON—A continuation of mild and moderate weather over the greater part of the country is tempering the effect of unemployment, while communications continue to pour in telling of efforts made by cities and states and industrial institutions to provide work. Manufacturers who are unable to increase the number of full-time employes are giving as many as possible part-time employment.

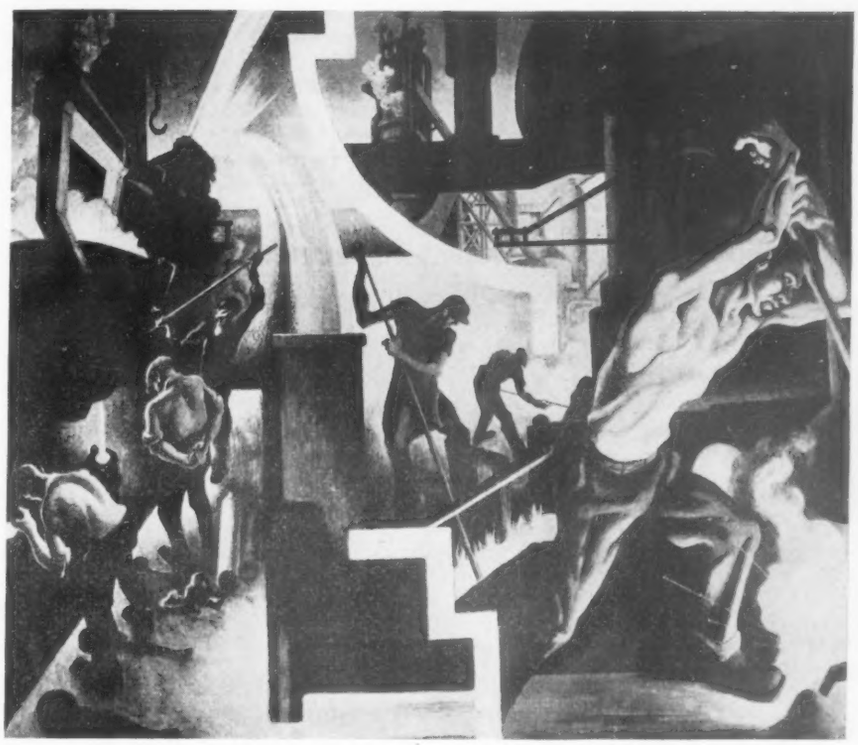
Improvement is reported in the radio industry. E. E. Shumaker, president, R.C.A. Victor Co., informed Col. Arthur Woods, in charge of the President's employment campaign, that while the company had no production during the first seven months of the year it now is operating "expanded facilities at the peak." "We are planning," he continues, "to keep as many employed as possible by first reducing to a five-day week, than four days, and so on; also reducing the number of hours per day."

Employment in ten shipyards of the United States, working principally with the aid of government loans, was increased from 22,608 on May 1 to 23,238 on Nov. 1. A plan for cutting down traveling on the part of the unemployed and reducing "the magnetic pull of the large cities at such times as these" is being worked out by the National Association of Travelers' Aid societies.

### This Country Best Employed

Based on the April census of unemployment the department of commerce estimates the number of unemployed able to work and seeking employment was at least 3,400,000 in September. This does not include persons working less than the normal day or week. More than 43,000,000 persons are classed as gainfully employed in this country and the volume of unemployment here is far below that of the other great industrial nations, largely because of the measures which have been taken during the past year.

The estimate of 3,400,000 for September compares with that of 3,500,000 for August, the apparent improvement being due entirely to sea-



—*Wide World Photo*

*BELIEVE IT OR NOT, BUT THIS DEPICTS STEEL*

*One of a series of murals by Thomas Hart Benton for the new School of Social Research, New York. It took the artist six years to conceive and execute this and four other murals in the modernistic manner*

sonal causes. Figures for October are not yet available.

## Producers' Council Sees Way To Stimulate Business

Co-operation between architects and manufacturers of building materials is expected to stimulate construction activities and tend to relieve unemployment. The Producers' council, a national body including about 60 large manufacturing enterprises, is organizing local council clubs in the principal cities for monthly discussions by local groups of architects and council representatives.

"Material prices today are at the lowest point they are likely to reach, and representing as they do about 60 per cent of the cost of construction the opportunity exists now for economical building," says F. S. Laurence, executive secretary of the council, 386 Fourth avenue, New York. "Architects and producers of materials by conferences hope to arrive at methods in development and use of materials which will lead to permanent economies in construction costs."

## Foreign Trade Service Expedited as Relief Measure

Foreign trade promotion activities have been speeded up to a record pace by the bureau of foreign and domestic commerce, as an aid to American producers in overcoming the effects of depression in this country. W. L. Cooper, bureau director, reports it rendered 3,632,000 services, a record number, to manufacturers and exporters during the past fiscal year.

The bureau's cable service abroad was increased by more than 25 per cent, and it rushed to completion many researches which it felt would be of practical value in the present emergency. Despite the decline in United States export trade, the bureau's report indicates that the dollars-and-cents value of its services as reported by exporters rose during the year by 20 per cent.

## Steel Employment Reduced in October

Washington—Employment in the iron and steel industry decreased 2.3 per cent in October compared with September, according to preliminary figures issued by the bureau of labor statistics. Employment in the manufacture of agricultural implements increased slightly. Decreases of 3 to 3.8 per cent are reported in employment in October in cast iron pipe, machine tools, structural ironwork, and foundry and machine shop products. A decrease of 2.4 per cent was noted in shipbuilding employment.

## Harvester Company To Loan Money to Idle Employes

International Harvester Co., Chicago, is developing a plan to make moderate loans to employes laid off. Employes holding preferred stock may borrow money either directly from the company or through secured bank loans. To other needy employes, loans will be advanced by the company to be repaid over a considerable period. The company has been spreading out work, holding back some orders for production in the winter months.

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Sixty officials of the Bethlehem Shipbuilding Corp., Bethlehem, Pa., visited the Boston shipbuilding properties of the corporation Nov. 11.

*WINS MEDAL FOR WELDED AIRCRAFT CONSTRUCTION*

*J. B. Johnson, chief of material branch, war department, Wright Field, Dayton, O., has been awarded the 1930 Morehead Medal of the International Acetylene association for original research and development in welded aircraft construction. The presentation, shown here, was made on the occasion of the association's thirty-first annual convention in Chicago last week. From left to right are: C. A. McCune, retiring president; Mr. Johnson, receiving the medal; A. Cressy Morrison, secretary-treasurer, presenting the medal; and W. D. Flannery, president-elect, International Acetylene association*

## United Dividends in 29th Year; Financial Reports

Receipt last week of quarterly dividend checks by stockholders of the United Engineering & Foundry Co., Pittsburgh, marked the twenty-ninth consecutive year of payments by this company on its outstanding securities. In this period common stockholders have received $19,330,000 and preferred stockholders $3,675,000. Common stock payments this year have been $3 per share, there being a 35 cent extra payment over 1929.

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Electric Auto-Lite Co., Toledo, O., reports for nine months ended Sept. 30 net profit of $5,456,459, equal to $4.51 a share

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Kansas City Structural Steel Co., Kansas City, Mo., has declared regular quarterly dividend of $2 a share payable Nov. 15.

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Ohio Seamless Tube Co., Shelby, O., has declared regular quarterly dividend of 50 cents a share payable Nov. 15 to record Nov. 5.

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Edward G. Budd Mfg. Co., Philadelphia, reports net profit of $315,750 for nine months of 1930. For the third quarter net loss was $92,461.

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Bucyrus-Erie Co., Erie, Pa., has declared regular quarterly dividend of 25 cents a common share; 62½ cents a preferred share; $1.75 on 7 per cent preferred shares, all payable Jan. 2 to record Nov. 28.

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Greenfield Tap & Die Corp., Greenfield, Mass., has declared payment of regular quarterly $1.50 on 6 per cent preferred; $2 on 8 per cent preferred, both payable Jan. 2 to holders Dec. 15.

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Canadian Car & Foundry Co., Montreal, Que., has declared regular quarterly dividend of 44 cents a share payable Nov. 23 to holders Nov. 16. Preferred dividend of $1.50 was declared payable Jan. 2 to record as of Dec. 8.

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Pittsburgh Screw & Bolt Corp., Pittsburgh, reports net profit for nine months of $1,436,690, compared with $2,628,221 a year ago. After depreciation, interest and federal taxes this is 96 cents a share, against $1.75 a year ago.

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American Steel Foundries, Chicago, reports nine months' net of $2,720,369, or $2.40 a share, compared with $3,856,065, equal to $3.54 a share, in the same 1929 period. Third quarter net profit was $580,831, compared with $1,053,842 a year ago.

# Few Machine Tool Orders; All October Statistics Low

INDEX of machine tool orders for October at 90.1 dropped below the low point of 91.1 for July, causing the three-months' average trend line to recede slightly at 113.3 compared with 113.6 for September. Cancellations at 3.4 reduced the month's net order index to 86.7. Index of three-months' average orders follows, from report made to the National Machine Tool Builders' association:

| 1929 | *Index A | *Index B | *Index C | Total |
|---|---|---|---|---|
| Oct. ..... | 295.4 | 263.0 | 269.0 | 287.0 |
| Nov. ... | 250.8 | 235.7 | 261.2 | 247.2 |
| Dec. ... | 224.0 | 212.7 | 258.3 | 222.1 |
| 1930 | | | | |
| Jan. ... | 173.8 | 171.9 | *226.8 | 175.4 |
| Feb. ... | 170.3 | 169.1 | 213.6 | 172.6 |
| March | 172.8 | 184.0 | 219.7 | 177.8 |
| April .. | 167.6 | 197.7 | 214.4 | 176.8 |
| May .... | 155.2 | 191.2 | 195.3 | 165.1 |
| June ... | 137.6 | 171.6 | 169.4 | 146.7 |
| July .... | 106.6 | 146.5 | 146.9 | 117.3 |
| Aug. .. | 100.8 | 137.0 | 138.0 | 110.2 |
| Sept. .. | 103.5 | 139.0 | 156.0 | 113.6 |
| Oct. ... | 104.4 | 135.0 | 151.0 | 113.3 |

*Note—Index A, base over $50,000; Index B, base $10,000 to $50,000; Index C, base less than $10,000. Base: average shipments for years 1922-23-24. Totals: The total of all reports is not an average of A, B and C, but the sum of each item in percentage of the total base.

## Coal Output Off Slightly

Soft coal mined during the week ended Nov. 8 is estimated at 9,698,000 net tons by the coal division, bureau of mines. Compared with the output of the prior week, this is a decrease of 447,000 tons, or 4.4 per cent. Weeks ended Oct. 25 and Nov. 1 topped the 10,000,000-ton mark, the first of any weeks in ten months. Aggregate of 1930 production is 394,590,000 tons in comparison with 1929's 453,949,000 tons.

## Soft Coal Stocks Higher

Consumers stock of bituminous coal Oct. 1 totaled 35,900,000 net tons, compared with 32,200,000 tons July 1, according to the federal bureau of mines. Stocks at by-product coke plants Oct. 1 were sufficient for 32 days, steel plants 32, other industrials 36, coal-gas plants 68, electric utilities 50, and railroads 22.

## Enameled Shipments Slow

September shipments of enameled sheet metal ware were 297,622 dozens, compared with 309,645 dozens in August. Totals for nine months of 1930 place shipments at 2,683,029; for 1929 at 3,435,573; and for 1928, 3,123,164 dozens. Enameled ware included in the following summary is that having a vitreous coat on a sheet steel or iron base:

In Dozens

| 1929 | Total | White | Grey and Colored |
|---|---|---|---|
| Sept. | 338,169 | 143,505 | 194,664 |
| (9 mos.) | 3,435,573 | 1,484,352 | 1,951,221 |
| October | 371,292 | 158,138 | 213,154 |
| Nov. | 305,714 | 115,117 | 190,597 |
| Dec. | 391,523 | 103,404 | 288,119 |
| Total (year) | 4,504,102 | 1,861,011 | 2,653,091 |
| 1930 | | | |
| Jan. | 332,146 | 110,758 | 221,388 |
| Feb. | 331,915 | 120,523 | 211,392 |
| March | 341,372 | 124,856 | 216,516 |
| April | 318,431 | 124,562 | 193,869 |
| May | 290,617 | 114,709 | 175,908 |
| June | 247,861 | 90,151 | 157,710 |
| July | 213,420 | 70,718 | 142,702 |
| August | 309,645 | 89,259 | 220,386 |
| Sept. | 297,622 | 97,262 | 200,360 |
| (9 mos.) | 2,683,029 | 942,798 | 1,740,231 |

## Foundry Equipment Orders' Slump Is Pronounced

After September's slight turn for the better, gross orders for foundry equipment slipped badly in October to a 50 ratio to the average monthly orders for three successive years beginning 1922. This compares with September's 91 and last October's 245.3, and is a low for at least three years. Likewise, shipment and unfilled order indexes were off. Foundry Equipment Manufacturers' association reports for gross orders' index follow:

| | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|
| Jan. | 180.4 | 132.7 | 180.5 | 160.1 |
| Feb. | 198.0 | 123.6 | 197.0 | 196.4 |
| Mar. | 131.1 | 138.6 | 209.4 | 164.1 |
| Apr. | 130.0 | 107.7 | 172.6 | 122.8 |
| May | 134.8 | 335.6 | 177.7 | 92.7 |
| June | 138.4 | 149.1 | 177.3 | 102.1 |
| July | 89.9 | 94.8 | 219.3 | 90.6 |
| Aug. | 106.4 | 278.0 | 229.5 | 85.2 |
| Sept. | 80.4 | 170.0 | 216.3 | 91.0 |
| Oct. | 98.0 | 185.0 | 245.3 | 50.0 |
| Nov. | 95.8 | 197.8 | 128.6 | ..... |
| Dec. | 106.8 | 166.5 | 208.0 | ..... |

Base: Average monthly shipments for 1922-23-24 taken as 100.

## Ship Fewer Locomotives

October shipments of railroad locomotives totaled 50 locomotives, compared with 65 in September and 96 in October, 1929. Shipments for the year to date amount to 667 units, only slightly less than the 688 for the same months of last year. Table of shipments and unfilled orders, compiled by the department of commerce, follows:

| 1929 | Shipments Domestic | Shipments Foreign | Unfilled Orders Domestic | Unfilled Orders Foreign |
|---|---|---|---|---|
| Oct. | 96 | ..... | 396 | 27 |
| (10 mos.) | 608 | 80 | ..... | ..... |
| Nov. | 75 | 20 | 389 | 9 |
| Dec. | 63 | 4 | 483 | 7 |
| (year) | 746 | 104 | ..... | ..... |
| 1930 | | | | |
| Jan. | 48 | ..... | 577 | 10 |
| Feb. | 64 | 3 | 525 | 8 |
| March | 66 | 2 | 529 | 6 |
| April | 94 | 3 | 461 | 3 |
| May | 56 | 2 | 410 | 9 |
| June | 80 | 1 | 335 | 8 |
| July | 55 | 1 | 284 | 7 |
| Aug. | 73 | 4 | 229 | 5 |
| Sept.* | 65 | ..... | 169 | 5 |
| Oct. | 50 | ..... | 127 | 5 |
| (10 mos.) | 651 | 16 | ..... | ..... |

*Revised.

## Census Shows Shape Output

Production of structural steel shapes and concrete reinforcing bars, according to figures collected in the federal census of manufactures for 1929 is given as follows, in gross tons, with comparisons with 1927:

| Disposition | Structural Shapes (not assembled or fabricated) Heavy (leg or web, 3 inches and over) | | Light (leg or web, less than 3 inches) | |
|---|---|---|---|---|
| | 1929 | 1927 | 1929 | 1927 |
| Total.... | 3,999,434 | 3,103,981 | 622,661 | 607,727 |
| Consumed in works. | 141,075 | 142,076 | 72,421 | 67,412 |
| Transferred to other plants of company. | 208,316 | 152,530 | 4,573 | 8,426 |
| For sale... | 3,650,043 | 2,809,375 | 545,667 | 531,889 |

| | Concrete Reinforcing Bars 1929 | 1927 |
|---|---|---|
| Total..... | 864,326 | 782,774 |
| Consumed in works..... | 822 | 103 |
| Transferred to other plants of company..... | 76,335 | 782,671 |
| For sale..... | 787,169 | |

## Large Cranes For Republic

Republic Steel Corp., Youngstown, O., has placed in operation a large 275-ton ladle crane in its Youngstown open-hearth division. In a test of the new crane a lift of 343 tons of steel was accomplished. Two additional cranes of equal size will be installed within the next few weeks and an addition to the open-hearth building has been constructed. The new equipment increases the 85-ton furnaces to 120 tons capacity and provides for their later expansion to 250 tons.

## Dominion Rail Mill Busy

Steel mill of the Dominion Steel & Coal Co., Sydney, N. S., will go on double shift about Jan. 1. The rail mill has almost completed an order for 30,000 tons, and further orders are expected which will keep the mill running at double shift for the first four months of 1931.

# Industrial Men in the Day's News

## James E. Lose, General Superintendent, Homestead, Pa., Works, Carnegie Steel Co.

WITH the Carnegie Steel Co. since college, he has risen in 20 years from a tracer in a blast furnace plant drawing room to the general superintendency of its chief steelmaking unit.

SINCE April, 1928, he has been assistant general superintendent at Homestead, having previously risen to the general superintendency at Rankin, Pa.

IDENTIFIED with Eastern States Blast Furnace and Coke Oven association since its founding, he at present is its president.

STEADY advancement has marked the score of years spent with the Carnegie Steel Co., Pittsburgh, by James E. Lose who recently was appointed general superintendent of the Homestead, Pa., works, the principal steel-producing plant of that company. This appointment was noted in STEEL of Oct. 16. His years of affiliation with the Carnegie company, commencing in 1910 when he took the position of tracer with the Carrie furnaces, have given him a broad experience in blast furnace and steelmaking practice. They admirably equip him for his increased duties as plant superintendent.

Mr. Lose was born Jan. 17, 1891, in Osage county, Kans. Following his grade and high school education he attended the Carnegie Institute of Technology, Pittsburgh, from which he was graduated with a degree in mechanical engineering. He entered the employ of the Carnegie Steel Co. in January, 1910, as a tracer in the drawing room of the Carrie furnaces at Rankin, Pa. The succeeding 18 years were spent at this plant and when he left in April, 1928, to become assistant general superintendent at the Homestead works he relinquished the post of general superintendent. During that period Mr. Lose served as draftsman, stockhouse foreman, superintendent of construction, and assistant superintendent of blast furnaces.

Mr. Lose has been identified with the Eastern States Blast Furnace and Coke Oven association since its inception and currently is its president, formerly having held the offices of vice president and secretary-treasurer. He is also a member of the American Iron and Steel institute and presented a paper before that body in the spring of 1927.

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A. J. MC FARLAND has resigned as general manager, Follansbee, W. Va., plant Follansbee Bros. Co., to become first vice president, Wheeling Steel Corp., Wheeling, W. Va. Prior to 1925 Mr. McFarland was located at Steubenville, O. It is understood that Gilbert Follansbee, general manager, Toronto, O., plant, will also become general manager at Follansbee.

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Victor O. Homerberg, associate professor of physical metallurgy, Massachusetts Institute of Technology, Boston, on Nov. 1 became technical director, Nitralloy Corp., 52 Broadway, New York.

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W. D. Cameron, formerly assistant manager, Detroit office, General Electric Co., Schenectady, N. Y., has been appointed manager there to succeed the late J. Hal Livsey. Mr. Cameron has been affiliated with General Electric for 19 years, the last three at Detroit.

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E. L. Ferguson, effective Dec. 1, will be plant manager for Empire Steel Corp., Mansfield, O. For the past two years he has been superintendent of Falcon works, Niles, O., but now his jurisdiction will cover Falcon, Waddell and Thomas plants. Prior to 1928 he was with the Davey brothers at Mansfield for 25 years.

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Frank W. Lovett, who for 13 years has been identified with Link-Belt Co., Chicago, the last eight of which he has designed machinery for sewage treatment plants, has been appointed engineer in charge of sewage disposal equipment in the western territory. He will operate from the plant office, 300 West Pershing road, Chicago.

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N. J. Nordstrom has been appointed special sales representative of Superior Tube Co., Tulsa, Okla. He was a former purchasing agent of the Empire Companies, Bartlesville, Okla.

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E. A. Emerson, vice president and managing director, Armco International Corp., Middletown, O., and W. L. Allen, president, Sheffield Steel Corp., Kansas City, Mo., both subsidiaries of American Rolling Mill Co., have sailed for Europe in the interests of the company's foreign business. They will visit France and also will spend some time at

the company's plant at Shotton, near Chester, England.

E. J. Goldschmidt, statistician, American Rolling Mill Co., also has sailed for England and will spend some time at Shotton.

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James Corey, safety director, Continental Roll & Steel Foundry Co., Wheeling, W. Va., was recently named director, Wheeling Safety council.

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A. J. Foley resigned recently from the engineering department, Sargent & Lundy Inc., Chicago, to become manager of the Chicago sales office Beilan Co. Ltd., Los Angeles.

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W. S. Johnston, associated for the past four years with Allied Engineers Inc., New York, has become engineer in the mechanical division, Stone & Webster Inc., Boston.

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Albert M. Stedfast, for many years sales representative, Stedfast & Roulston Inc., Boston, Machinery, tools, etc., was recently made vice president and director to succeed the late J. W. R. Roulston.

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W. Bruce Pirnie has resigned as president, Cheney Bigelow Wire Works, Springfield, Mass., but remains on the board of directors.

H. Y. McMullen has been made treasurer to succeed Alexander Warden.

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J. J. Lynch, formerly chief estimator, Cleveland district, Austin Co. Cleveland, engineer, builder and contractor, has been made manager of the new Canadian branch to operate from Canada Permanent building, 329 Bay street, Toronto, Ont.

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Jessel S. Whyte, vice president and general manager, MacWhyte Co., Kenosha, Wis., manufacturer of wire rope and cable, has been appointed a member of the Wisconsin state board of industrial education for the term expiring July 1, 1933.

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H. E. Younggren has been appointed traffic manager of the Kewanee Boiler Corp., Kewanee, Ill., succeeding H. D. Cherry, former secretary of the company, who also held that position. Mr. Cherry recently retired.

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A. S. Seaman, former vice president of the Allegheny Steel & Brass Corp., Chicago, has opened his own office as sales representative at 80 East Jackson boulevard, that city. He recently sold his interests in the Allegheny Steel & Brass Corp.

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John Howe Hall has been appointed technical assistant to the president, Taylor-Wharton Iron & Steel Co., High Bridge, N. J. His duties will cover full supervision of all research activities, a general check on manufacturing methods, and sales engineering.

L. A. Kleber has been appointed superintendent, Taylor-Wharton Iron & Steel Co., High Bridge, N. J., succeeding H. R. Lange, resigned. Mr. Kleber had been superintendent of the foundry at the Taylor-Wharton company's Easton, Pa., plant.

Stanley Apgar, who has been superintendent of the High Bridge foundry, will succeed Mr. Kleber, as superintendent of the foundry at Easton.

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Philip S. Savage, formerly superintendent, Donner-Hanna Coke Corp., buffalo, has been promoted to general manager, and former assistant superintendent, Harry S. Owens, has been promoted to superintendent, following the recent resignation of Howard P. Zeller, as noted in STEEL of Nov. 13.

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W. H. Scanlon has been appointed manager of the new bar and structural department, Weirton Steel Co., Weirton, W. Va. Mr. Scanlon has been identified with the steel industry for many years in the Pittsburgh district and formerly was connected with Carnegie Steel Co. For the past three years he was associated with W. J. Rainey Inc. at Pittsburgh.

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S. C. Hollister, since 1920 member of Light, Hollister & Ferguson, Philadelphia, consulting engineers, and chairman of committee C-2 on reinforced concrete of the American Society of Testing Materials, has been appointed professor and head of structural engineering and assistant director of the testing materials laboratory of Purdue university, Lafayette, Ind.

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H. R. Goss has been elected president, Middle States Construction Co., Columbus, O., to succeed Merrill Hibbard, whose death was noted in STEEL of Oct. 30.

V. S. Arnold was elected secretary-treasurer, and S. O. Rogers, for some time with the Jeffrey Mfg. Co., Columbus, returns to the Middle States company as superintendent in charge of field and shop operations.

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C. C. Henderson, vice president and director, Allegheny Steel Co., Brackenridge, Pa., has been appointed chairman of the board of the Monongahela National bank, Pittsburgh.

George R. Benson, recently vice president of the Union Trust Co., Pittsburgh, has been elected president of the Monongahela bank. He was associated with the National Tube Co., Pittsburgh, for a number of years, serving at one time as treasurer.

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James M. Crawford has been appointed assistant superintendent of section C, General Electric Co., Schenectady, N. Y.

Earl S. Henningsen has been made engineer of the alternate current engineering department to succeed H. G. Reist, who retired Nov. 1, after 41 years' service.

L. T. Stafford has been appointed general foreman of the testing department, and C. T. Crocker designing engineer of aeronautics and marine department.

L. S. Cusato has been made superintendent of the General Electric Co.'s plant at Pittsfield, Mass., succeeding A. M. Jones, assigned to the staff of the general superintendent. Mr. Cusato was at the company's Erie, Pa., plant for three years and has been located at Pittsfield since 1926.

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Ralph M. Dravo, vice president, Dravo Contracting Co., Pittsburgh, has resigned as chief of the Pittsburgh ordnance district, the position held by him since 1922. Mr. Dravo also was chief of the district during the World war. He has been succeeded by Frank L. Bell, president, Edgewater Steel Co., Oakmont, Pa.

## Plan Welding Conference

Latest developments in the application of welding as applied to manufacturing operations and maintenance problems are to be discussed at the sixth annual conference on welding to be held at Purdue university, West Lafayette, Ind., Dec. 10-11, under auspices of the engineering extension department.

The two-day educational conference sponsored by the engineering extension department of the university, is open to anyone interested in welding. Welding equipment is to be exhibited and demonstrated in addition to the technical sessions.

Programs and detailed information may be obtained by addressing the engineering extension department.

## Urges Science Library

Creation of a reference library in Milwaukee to aid research into natural and applied sciences was urged by Arthur Simon, representing the Engineers' Society of Milwaukee on the mayor's advisory council, at its regular session recently. Mr. Simon is an electrical engineer with Cutler-Hammer, Inc.

He stressed the need for an institution of this character not only by private business and industry, but for citizens in technical occupations.

# Obituaries

JOHN E. PERRY, 52, formerly chairman of the Valley Mould & Iron Corp., Hubbard, O., Sharpsville, Pa., and South Chicago, Ill., died of a heart attack at Youngstown, (O.) Country club, Nov. 11. Mr. Perry won renown as a metallurgist, specializing in foundry practice. More than 13 years ago he was head of the mining and transportation department, Brier Hill Steel Co., Youngstown, O., became assistant to the president, Republic Iron & Steel Co., Youngstown, and in July, 1917, became president, Wharton Steel Co., Wharton, N. J. In 1918 he was appointed president of Valley Mould & Iron Corp., Sharpsville, Pa. Under his supervision the company's modern ingot mold plant at Hubbard, O., was built, where ingot molds and stools are cast from direct metal. Under his direction, too, a new plant at South Chicago, Ill., was established. He retired as president in January, 1929, becoming chairman, which office he later relinquished.

John E. Perry

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John A. Cordray, 55, proprietor, J. A. Cordray Foundry Co., Charleston, S. C., died there recently.

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Reginald P. Tracy, 45, president and general manager, Manning, Bowman & Co., Meriden, Conn., electrical appliance manufacturers, died Nov. 14.

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Robert H. Thorne, founder and president, Darling Valve & Mfg. Co., Williamsport, Pa., died Oct. 27 after a month's illness. He located in Williamsport in 1885, organizing the Darling company in 1888 and becoming its general manager. The business was reincorporated in 1896 and Mr. Thorne became president.

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Arthur E. Wilson, 46, founder and president, Wilson Co., Indianapolis, distributor of factory equipment, died at his home recently after a week's illness.

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William G. Carlin, 61, formerly associated with Thomas Carlin Sons Co., Pittsburgh, manufacturer of foundry supplies, died at his home near Salem, O., Nov. 8.

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Edward C. Waldvogel, 59, who retired last April as vice president of Yale & Towne Lock Co., Stamford, Conn., died Nov. 13 at New Rochelle, N. Y. He was connected with Yale & Towne company for more than 30 years.

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Gen. T. Coleman du Pont, former senator from Delaware who died Nov. 11, was manager of the Johnson Steel Co., Johnstown, Pa., afterward the Lorain Steel Co. and now a subsidiary of the United States Steel Corp., from 1893 to 1900.

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John A. May, 71, formerly associated with American Fork & Hoe Co., Ashtabula, O., died Nov. 9 in San Diego, Calif. He had practiced law in Chicago and San Diego and formerly held municipal offices in Chicago.

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E. F. Kitselman, 69, secretary, Kitselman Bros., Muncie, Ind., manufacturers of wire fence, secretary and general manager, Indiana Steel & Wire Co., as well as vice president of Muncie Oil & Engine Co., both of Muncie, died Nov. 10 at Rochester, Minn.

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William Edgar Cose, 72, for many years a member of Crosby & Co., Boston gage manufacturers, died at East Braintree, Mass., Nov. 8 after a short illness. He was born in Roxbury, Mass., and in 1905, 1906 and 1907 was a member of city council, Boston. He retired several years ago.

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Francis J. Jester, 46, assistant secretary, United States Steel Corp., New York, and also of its subsidiaries, American Bridge Co., United States Steel Products Co. and Federal Steel Co., died Nov. 4 at his home at Leonia, N. J. Mr. Jester entered the employ of the Steel corporation May 17, 1901, six weeks after it was organized. In 1907 he left to become associated with Charles M. Schwab. He returned to the Steel corporation on May 1, 1908, and was elected assistant secretary April 25, 1922. He became assistant secretary of American Bridge Co. and Federal Steel Co. April 16, 1928, and assistant secretary of United States Steel Products Co., April 15, 1929.

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Dr. Richard Moldenke, 66, internationally known foundryman and metallurgist, prolific writer on foundry subjects, especially malleable and cast iron, and active worker in trade associations, died at Muhlenberg hospital, Plainfield, N. J., Nov. 17, following less than a month's illness.

Dr. Richard Moldenke

Dr. Moldenke was born in Watertown, Wis., Nov. 1, 1864. He was graduated from Columbia university school of mines in 1885. After teaching for two years he returned to receive his doctor of philosophy degree. In 1889 he organized the electrical engineering department at Michigan school of mines, Houghton, Mich. The following year he became metallurgist for McConway & Torley Co., Pittsburgh.

After organizing Pennsylvania Malleable Co., Pittsburgh, in 1899 he acted as superintendent until production was well under way and he was called to New York to attend important private and family interests. For many years he has conducted a complete experimental foundry upon his estate at Watchung, N. J.

He was elected secretary of American Foundrymen's association in Chi-

(*Concluded on Page* 33)

# Here and There in Industry

CREDIT ASSOCIATION OF THE BUILDING TRADES OF NEW YORK, Charles L. Eidlitz, managing director, has moved its executive offices to rooms 3004-81 Grand Central Terminal building, 452 Lexington avenue. Mr. Eidlitz also is chairman of the board of governors of the Structural Steel Board of Trade and has his office at room 3002, adjoining the new offices. Plans are under way to increase membership in the credit association to 1000. It includes general and subcontractors, loaning institutions, material dealers and others affiliated with building construction.

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Harrisburg Pipe & Pipe Bending Co. of Texas, Houston, Tex., has changed its name to the Corbett Corp.

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E. C. Miller Foundry, Albemarle, N. C., has been purchased by A. D. Monroe and the name has been changed to the A. D. Monroe foundry.

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McInnes Steel Co. Ltd., Corry, Pa., is being reorganized and plans made for expanding its output. It produces tool steels.

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Mahoning Valley Steel Co., Niles, O., has completed installation of a normalizing furnace, enabling the production of sheets suitable for the most severe drawing requirements.

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Floor Accessories Co. Inc., New York, has recently opened district sales offices at 111 West Washington street, Chicago, in charge of Charles E. Wheeler.

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Fiat Metal Mfg. Co., Chicago, manufacturer of metal partitions, has opened a branch at 1701 Walnut street, Philadelphia, in charge of M. F. Snook.

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Machine Tool & Supply Co., Tulsa, Okla., has been appointed eastern Oklahoma distributor for South Bend Lathe Works, South Bend, Ind.

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Indian Motocycle Co., Springfield, Mass., has been making extensive changes in its plant, including relocation of some machinery and establishment of a continuous assembly line. Plans include installation of new machinery in place of some present equipment.

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American Metal Products Co., Milwaukee, has opened a district sales office at 327 Exchange National Bank building, Tulsa, Okla., in charge of C. A. Fulmer.

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Wickwire-Spencer Sales Corp., subsidiary of Wickwire-Spencer Steel Co., New York, has opened a district sales office in the Philtower building, Tulsa, Okla. E. L. Stevens is general sales manager.

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Cleveland Pneumatic Tool Co., Cleveland, has moved its Philadelphia office from the Bourse building to the seventh floor, Terminal Commerce building, 401 North Broad street. R. B. Van Norman is district manager.

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E. W. Bliss Co., Salem, O., has taken an order from the Dallas Brass & Copper Co., Chicago, for an 8 x 21½ x 20-inch four-high roll stand and drive and from the Blair Strip Steel Co., New Castle, Pa., for a 16 x 24-inch two-high cold-rolling mill.

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Road Supply & Metal Co., Topeka, Kans., Herbert S. Putney president, has been sold to the American Rolling Mill Co., Middletown, O., which will continue the business along the same lines as heretofore. It sells corrugated iron culverts and road machinery.

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American Radiator & Standard Sanitary Corp., New York, has closed its plant at Bremen, Ind., and plans to remove equipment to the plant at Buffalo. Foundry operation has been ended and other departments will close as the product in process is completed.

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Whiting Corp., Harvey, Ill., has been awarded the contract for five 5-foot by 15-foot sluice gates, one 8-foot and two 6-foot overflow gates, thirty 6-inch plug valves, operating mechanisms, drive-shafting and appurtenances for the Hill View reservoir by the Board of Water Supply, New York. Nearly 100 tons of iron castings are included in the contract. Most are to be made at the company's Birmingham plant.

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American Cast Iron Pipe Co., Birmingham, Ala., is completing a foundry unit for production of monocast pipe up to 24 inches. Production is expected by the first of the year. Capacity of 200 tons of centrifugally cast pipe per shift is planned and 24-hour operation is possible. The pipe will be produced in 14-inch, 16-inch, 18-inch, 20-inch and 24-inch diameters, 16-foot lengths, bell and spigot type, with a bead cast on the spigot end.

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Alloy Welding & Mfg. Co., Pittsburgh, has been incorporated to continue the business of the Pittsburgh Producers Supply Co. The change in name accompanies expansion and increased capital to handle larger business than was possible with facilities of the older company. A specialty is made of welding of chrome and chrome-nickel steels for temperature and corrosion resistance use. Reeve H. Banks is president, C. J. Francis vice president and superintendent in charge of production, and W. L. James secretary and treasurer. Plans are being considered for an addition to the company's plant at 1115 Metropolitan street to double capacity.

□ □ □

American Cast Iron Pipe Co., Birmingham, Ala., celebrated the twenty-fifth anniversary of its founding, during October. The company was incorporated Oct. 9, 1905, and cast its first pipe May 11, 1906. The first shipment of pipe was to Atlanta, Ga., May 19, 1906. John J. Eagan, Atlanta, was its first president and at his death a trust estate was created for the purpose of helping employes and also patrons of the company.

Annual production has been increased from 20,000 tons to 180,000 tons. Annual sales have reached over $7,000,000. The plant is situated on 200 acres in the city limits of Birmingham. The annual payroll is more than $2,000,000.

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Michigan Power Shovel Co., successor to the Detroit Power Shovel Co., has moved its business from Detroit to Benton Harbor, Mich., where its shovels will be manufactured at the plant of the Ross Carrier Co., which is equipped for heavy work. It is planned to have 25 machines completed by the first of the year. H. B. Ross, president of the Ross Carrier Co., has been made chairman of the board; W. E. Bernhard, formerly chief engineer of the Universal Power Shovel Co., Detroit, has been made president and chief engineer; D. H. Millard, vice president and sales manager; D. C. Abbott, secretary and treasurer; Don H. Ross, Benton Harbor, H. E. Wynn, Kalamazoo, and A. A. Abbott, Detroit, with the above officers, form the board of directors.

# MIRRORS of MOTORDOM

*DETROIT*

AUTOMOBILE production is staging a comeback in November after declining monthly since April and following the decided slump in October. Whether this upturn will continue in December is to be doubted because Chevrolet, now working on 1931 models at a fast pace, will have largely stocked dealers by that time.

History of automobile output shows without exception a decline from November to December. In anticipation of the January shows, new models have been produced largely in November and early December; dealers are stocked in December; then the verdict of the shows is awaited.

Categorically, 1930's closing months reveal Chevrolet, Hudson-Essex, Willys-Overland, Oldsmobile and Oakland-Pontiac in this transitional stage.

Chevrolet is slightly ahead of that schedule. Its plants are working full speed ahead on a 60,000-65,000-car month and account for the largest individual total.

Ford output has been easing and can be counted on for few more working days this year, with a three-week December shutdown possible.

Cars are not now made in anticipation of consumers purchasing them. And, as 1931 history has been recorded, the buoyant effect of new models boosting production has often been quickly spent.

## Ford Relinquishes Lead in November Production

Ford is operating its engineering and tool divisions seven days a week, its office four and its plant three. Production averages about 3000 units daily.

With but nine production days for November, a slight recession included at the end of the present month due to Thanksgiving, and an early December shutdown presumed, Ford has slowed as predicted in the early fall.

As of Nov. 1, there were but 12 to a possible 15 working days left for Ford in 1930. Releases have shown curtailment and little specifying is being done for steel and parts for next month's work. Ford now has enough stainless sheets and strip to last through the first week of December. All of which points to a 30,000 to 35,000-unit production month for November, though reported assembly of already manufactured parts will undoubtedly swell this total.

And once more Chevrolet, with its plants close to capacity, will eclipse the Ford monthly output—almost running to double for the month its chief competitor's figure.

## Report New Ford "8" To Have V-Type Motor

There is little doubt in Detroit that Ford is ready, or approximately ready, with a light eight. The concensus of opinion is that the motor will be of the V type, to which Lincoln has adhered, and that the selling price will be slightly under $1000.

The present four-cylinder Ford undoubtedly will be continued with mechanical improvements added from time to time. Recently Edsel Ford said 30,000,000 Model A's will be produced without substantial mechanical change, leaving some 25,000,000 Model A's yet to leave the assembly line.

Ford in the past year has concluded or initiated plant extensions costing upward of $25,000,000. Obviously, with an increasing proportion of export business being met by foreign factories, and with more parts purchased outside, this expansion is not necessitated by the needs of Model A alone.

That Ford engineers have been experimenting with an eight has been no secret in Detroit for several years. Now, however, experiments are believed near their conclusion and after the turn of the year—it may not be until spring—something definite may be expected from Ford.

◆

Releases from Chevrolet still are in good volume. The new 1931 models have now been announced and schedules call for 62,000 units to come from the assembly lines this month.

The new line has a longer wheelbase, now 109 inches, and a heavier body, giving it a more substantial appearance. Chromium plating still is used extensively, only two parts being so-called stainless steel: The cowl band and running board molding.

A longer, larger, and more evenly rectangular radiator shell is chromium plating on nickel and brass. Its capacity has been increased one-fifth.

Bright flat hubcaps are chromium plate on aluminum. And the current vogue for radiator screens that the Cadillac V-16 started not so long ago is now standard equipment for Chevrolet sport models, the mesh being a thin chrome plating on brass.

Bumpers, headlights, door sill, most of the hardware in the interior and countless other parts are likewise chromium plated.

## Low Chevrolet Dealer Stocks a Strong Factor

The motor, still a six, has a ribbed reinforced block, and other mechanical improvements are in evidence. All models have lower seats; two pressed moldings on the closed models give a heavier body appearance.

Chevrolets are priced cheaper, cuts running from $20 to $40 a model.

Stocks of the old Chevrolet Six have been worked down to 30,000-35,000 cars for the entire country, among almost 12,000 distributors. Production, keyed to its highest this month, will be largely stocking them.

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Kelsey Hayes Wheel Co. is feeling

curtailment now from Chevrolet's operations, having produced in advance of the assembly lines, for the first large factory order. The company now makes about half of its own wheels, which are wire standard equipment on new cars.

Also, Ford production is slimmer than it has been and Kelsey Hayes feels recession perhaps more than at any time this year.

## Relatively Few Models Left for January Shows

What new models can distributors display at the January shows?

Chevrolet is out with its next year's offering two months ahead of past performance. In the past six months Reo, Nash, Cadillac, LaSalle, Buick, and some Chrysler lines have brought out new models.

Dodge and DeSoto may be expected to show something new. Hudson-Essex is a certainty, Lincoln will revise its car and Willys, Oakland-Pontiac, Oldsmobile, Marmon and Stutz, lead the scattered ranks that are likely to show new models in January.

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Indicative of slight 1931 changes in the 4-cylinder Model A Ford is the victoria four-seat coupe model. The radiator shell has a weld insert of sheet steel solidly painted the color of the body and in color contrast to the narrow stainless steel strip around its edges.

This replaces the former solid stainless steel draw just beneath the radiator cap and on which the makers name is emblazoned. Visorless, the unit has square flaps of fabric mounted on the inside of the top on hinges just over the front seats. These are adjustable with a flick of the hand to the sun's glare. The body is one of Murray's.

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Hudson-Essex has been scene of recent life. Adding men to have near 3000 busy in some departments and prospects of an additional hiring of 1000 more, the plant has been busy since Nov. 5 on new models.

Production goes ahead five days weekly at 150 a day. An increasing pace will be continued, calculated to reach 300 daily until dealers are stocked sufficiently by Dec. 15. Shipments started last week to dealers on the new lines.

Unsold Hudson and Essex are practically nil, with but little over 5000 among approximately 4000 dealer outlets.

The coming Essex, hardly to be in Ford's price class as some guess, is going to sell from $600 to $650; the Hudson, also at a material deduction, will go at around $900 to $950.

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Cadillac and LaSalle production at 570 for the week is down over 100 units from last week. Of the former figure, only a bare 10 to 12 are the Cadillac 16; the remainder of an approximate 110 daily, five days, being split in even thirds among Cadillac eight, LaSalle eight and Cadillac twelve.

Buick is turning out 600 cars a day, five days a week. Material orders are seasonally good from this division.

Oakland-Pontiac, virtually closed in production, keeps stocks on hand and with dealers holding at normal. Oakland will announce a new model, probably at the shows. Pontiac, too, will change, perhaps before that time, and among other things will have a chromium-plated radiator mesh.

Oldsmobile schedules are down one week, on restricted turn the next. Though down this week, 600 units were assembled last. Viking's manufacture has been discontinued but stocks are still being disposed of.

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Willys-Overland has added men, and now with 6000 at work on impending sixes and eights, 5000 cars will be manufactured this month. This week over last, output has almost doubled.

Chrysler itself, four days a week makes 600 units. Dodge passenger division is at two days, truck department on fixe days weekly. DeSoto holds at approximately 300 and Plymouth at 800 weekly.

Studebaker will close its South Bend plant for inventory the last third of this month and therefore counts on around 3000 cars, compared with October's 4500.

Reo has curtailed forces and schedules, and 600 new models coming from assembly lines last week reveal a slowing.

Austin, temporarily at least, is out of production.

## Parts Business Benefits from Old-Car Use

Manufacturers of automotive parts and accessories report the same activity in October as in September by their index, indicating that the process of reconditioning old cars continued uninterrupted . . . Newton Steel Co.'s Monroe, Mich., plant is still idle and Michigan Steel Corp. works at about 25 per cent of capacity . . . Great Lakes poured 20,000 tons of steel from two furnaces in two months . . . The new sheet extra list, perhaps a step in attempting a cover-all price abolishing overlapping extras, some say is a result of pressure by buyers who like to know net prices their competitor consumer is getting . . . For eight months this year retail financing has averaged $560 per new car, against $591 for the same time last year; for used cars, retail financing averages $276, in contrast to 1929's $301 over the like time.

# Obituaries

(*Concluded from Page* 30)

cago in 1900, remaining until 1904, and also served as vice president of American Society for Testing Materials. He was author of "Principles of Iron Founding" and "Production of Malleable Castings," as well as numerous articles, treatises, committee reports, etc., on foundry subjects. He also won renown for advancing an international standard for comparison of cast iron.

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Tracy W. Guthrie, 62, vice president, Hillman Coal & Coke Co., Pittsburgh, died Nov. 15 at his home in Sewickley, Pa. Mr. Guthrie was born in Portsmouth, O., and originally was engaged in the railroad business in the Hocking valley. He later became president of the Republic Iron & Steel Co., serving from 1907 to 1911. He was owner and operator of Standard Welding Co., Cleveland, and then returned to Pittsburgh in 1916 as president of the United Coal Corp., there. He retained this office after the concern changed its name to Hillman Coal & Coke Co. and was made vice president two years ago, when he resigned the presidency because of ill health.

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Charles Prentice Turner, 68, one-time chief engineer at the Steelton, Pa., plant, Bethlehem Steel Co., and later affiliated with the company's development and research department at Bethlehem, died there recently. Born in Oxford, N. Y., he was graduated from Lehigh university in 1889 with a degree in mechanical engineering. He became associated with the Pennsylvania Steel Co., Steelton, Pa., absorbed by Bethlehem in 1906. Two years later he became chief engineer at Steelton and continued in that capacity until 1926. He retired in 1929.

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Henry Harnischfeger, 75, founder and president, Harnischfeger Corp., Milwaukee, died suddenly in his office Nov. 15. Born in Germany, he located in the United States at 16, being employed as a toolmaker in a Elizabeth, N. J., sewing machine plant. In 1881 he became foreman of the milling machine department, Whitehill Sewing Machine Co., Milwaukee. Several years later he formed a partnership with Alonzo Pawling to do general machine shop work. In 1887 they with A. J. Shaw formed Shaw Electric Crane Co., which became Pawling & Harnischfeger Co., after Mr. Shaw's retirement. The name again was changed to its present form when Mr. Pawling retired in 1914. About 18 months ago Mr. Harnischfeger acquired control of Milwaukee Electric Crane & Hoist Corp.

# EDITORIAL

## An Amazing Decade—Prepare for It

A LEADER of a successful business institution must have vision—a quality that cannot be developed if one is to give his entire attention to immediate problems. At the moment, conditions are such that the average executive is compelled by necessity to give more than ordinary time and thought to the harrasing details of current affairs. And yet this is a period when thoughtful consideration of the future is most important. In fact, it would seem that the man responsible for the continuing success of an industrial company cannot afford to deprive himself of the benefits derived from the broad perspective which is gained only by a long-time view of the future.

For instance, if one restricts his vision to the outlook for the next few months, he is sure to arrive at conclusions far different from those which result from a study of probable conditions in the next 10 years. The best policy is to weigh the relative importance of the short-time and the long-time views and to plan accordingly. Fortunate, indeed, is the company which is so well fortified against present conditions that it can plan adequately for the next 10 years.

This is apparent to anyone who has made a study of what is in store for industry in the present decade. At the recent fall conference of the Associated Business Papers Inc., and the National Conference of Business Paper Editors, an attempt was made to scan the future developments in 12 important industries. The picture revealed by 12 editors, participating with Magnus W. Alexander, president of the National Industrial Conference Board, is so striking that there can be no doubt that the decade from 1930 to 1940 will witness the most amazing industrial development in the world's history.

### Increased Population, Higher Living Standards, Will Swell Demand

Between now and 1940 the population of this nation will be increased by about 17,000,000. The requirements of these millions in the essentials of shelter, food and clothing will furnish a steady increase in the demand for basic materials and equipment. Construction of paved roads will make our past efforts in road building appear primitive. Provided enabling legislation is passed by congress, the various transportation facilities of the country will be co-ordinated, making possible cheaper and more efficient handling of freight and passengers. The greater utilization of pipe lines for the transport of oil, gas, gasoline and other commodities will come.

Communication is on the threshhold of spectacular new developments. The principle of interconnected typewriters will be applied to many uses. Television probably will be in wide spread service before the end of the decade. The radio, still in the pioneering stage, will become a more practical agency of communication before 1940.

Ideas of housing the nation's millions already are undergoing radical changes. Impulsive and ill-advised real estate operations gradually are being supplanted by well-planned projects, backed by strong, responsible companies. The movement to rebuild the slum sections of large cities is gaining momentum. Fire-safe construction for residences, involving steel framing, is viewed with more favor than before. The design of office buildings is undergoing changes which call for a broadening use of steel. Artificial light has become so efficient that the necessity of windows in structures now is questioned.

### Products of Research Laboratories Afford Market Opportunities

Radical changes are taking place in the food industries. Improved refrigeration is permitting the shipping and preservation of so-called perishables, thereby eliminating waste from spoilage and loss from market speculation. Improvement in packaging and in methods of distribution also is contributing to the stability of food markets. In retailing of commodities, there is a tendency to reduce overhead by book-keeping machines and improved material handling.

Laboratories in every industry are yielding new materials and products, many of which already have shown sufficient promise to indicate that when they are applied commercially, they will open up new market opportunities. Among the materials are alloys of steel and nonferrous metals, plastics, flexible glass, etc. The field of electronics is typical of what may develop from the general application of a single idea.

These are only a few of the developments that are certain to appear within the next few years. Many of them already are about to emerge from the experimental stage. If only half of them live up to present expectations, the resulting demand upon the nation's capacity for materials and machinery will be tremendous. And to this domestic demand should be added the requirements resulting from an elevation of the standards of living in Europe (to say nothing of standards in Asia) the capacity of the industrial nations of the world would be put to a real test.

Now is a good time to look ahead!

# Present Tendencies in Industry Point To New Vista of Opportunity for Steel

Decade from 1930 to 1940 Will Witness General Application of Numerous New Ideas Which Will Mean Increased Demand for Basic Materials, Including Steel and Alloys of Steel

*WHEN editors of 12 American business papers, attending the fall conference of the Associated Business Papers Inc. and the National Conference of Business Paper Editors, described current tendencies in their respective industries and showed how they will affect developments of the next decade, they pictured—unconsciously perhaps—an amazing field of opportunity for the producers of steel and the manufacturers of machinery and equipment.*

*The remarks of four of the editors were abstracted in last week's issue. On this and the following page are presented in substance the reports of the other editors who participated in the forum.*—THE EDITORS.

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## Building Industry Is Headed Toward Sounder Basis of Operation

While activity in building during the past year has been disappointing, and the recovery may be painfully slow, there is every indication that the building industry will emerge on a sounder basis than ever before. Real estate operators have been taught many lessons and the tendency is toward more conservative and more practical administration. This is evidenced by several of the larger projects undertaken during recent months by responsible sponsors such as John D. Rockefeller, Jr., Metropolitan Life Insurance Co. and others.

The movement to rehabilitate the rundown sections of large cities is gaining impetus. New designs and new construction are being introduced. There is a definite trend toward the practice of assembling materials at the factory in order to reduce the waste now incurred by hand-assembly at the building site.

It is expected that the Chicago Worlds Fair of 1933 will influence architecture as did the famous fair of 1893. Already the plans for that event reveal radical departures from conventional design and construction.

THOMAS D. HOLDEN,
*F. W. Dodge Corp.*

## Manufacturers of Electrical Equipment Alive To New Markets

Many new electrical appliances will be introduced during the next 10 years. Equipment now undreamed of will be in common use before the decade closes. Already the photo-electric cell has demonstrated its worth and before long its applications will spread to such an extent that new merchandising opportunities for it and accessory equipment will be afforded.

The two largest companies in electrical manufacturing account for 35 per cent or less of the total value of products of the industry. The remaining 65 per cent or more is manufactured by several thousand smaller concerns. The trade organizations of the industry are alive to the possibilities of extending the market and are functioning effectively. The tendency in distribution is toward the employment of large jobbing chains, of which three are in existence.

STANLEY DENNIS,
*Electrical Manufacturing*

## Requirements of Additional Population Will Swell Demand for Materials

The next 10 years will witness the greatest developments in the use of natural gas in the history of the country. The pipe lines now under construction are only the beginning of a movement to supply this natural fuel to nearly half of the population of the United States.

With natural gas estimated at 6 cents per 1000 cubic feet at the well, and with transport by pipe lines costing from 3 to 4 cents per 1000 cubic feet per 100 miles, the consumer will be afforded an economical fuel.

In 1940 there will be 17,000,000 more inhabit-

ants in the United States than there are today. The needs of these additional millions coupled with the requirements growing out of new developments in science will create a greater demand for basic materials. Furthermore, if the 350,000,000 individuals of Europe were to be furnished a standard of living comparable to that of the average American citizen of 1930, the demand for steel, copper, etc., would tax world capacity.

The construction of good roads is in its infancy in the United States. Air conditioning is a field of which much may be expected in the present decade. Electronics, a comparatively new branch of the electrical industry, has great promise of development. Molded plastics may come into general use for products now made of other materials. All of these developments—already assured—will give impetus to the greatest industrial expansion in the history of the nation.

FLOYD PARSONS,
*Gas-Age Record*

## Steel Industry Is Becoming Publicity-Minded

For the first time the steel industry is becoming publicity-minded. It is more eager than ever before to present its story to industry and to the public at large. This new attitude will call for capable counsel on publicity and advertising which will help the industry to put over its message in the most effective way.

Research is an important division of steel industry activity today and assures it of a steady flow of new products. Corrosion-resisting steel will be produced on a tonnage basis; welded steel construction is gaining favor, now that many of the problems attending its use have been solved; and costs of production are being reduced due to the increased use of better equipment, including so-called continuous mills.

W. W. MACON,
*Iron Age*

## Retailers Look To Machines To Reduce Burden of Overhead

A survey of retail stores shows that the principal problem of the larger establishments is that of reducing the cost of non-selling activities and thereby cutting the burden of excessive overhead. Already there are signs that progress in this direction is being made by introducing machines—principally computing and other bookkeeping devices—and more efficient material handling equipment, including conveyors and other devices for stores proper and improved transportation for incoming goods and for distribution to consumers.

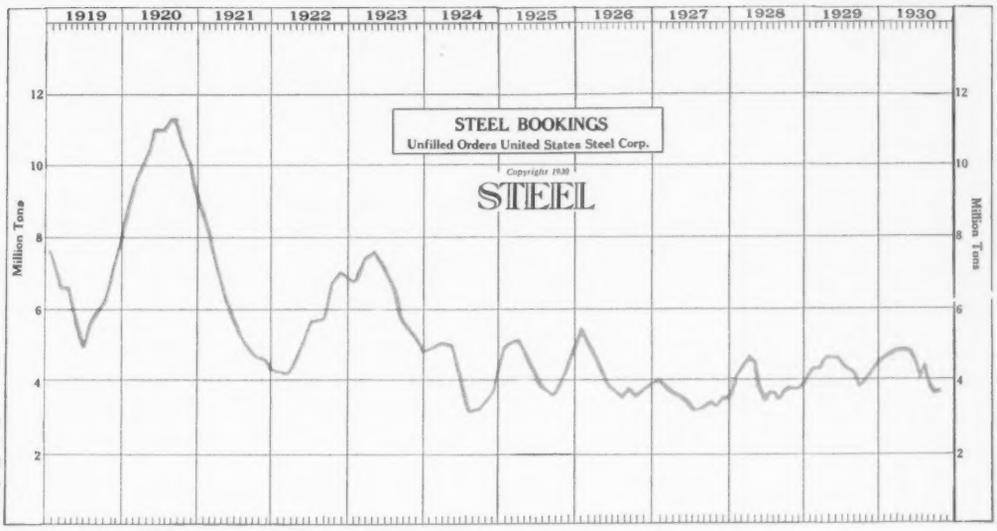
—MILTON ADLER,
*Fairchild Publications*

## Chemical Industry Expanding with Laboratory-Created Products

Thanks to its ability to change quickly the chemical industry is almost depression-proof. When companies saw that the reduction in automobile output would cut the consumption of lacquers, they turned to cellophane, rayon, plastics, etc. Manufacturers of explosives have shifted to many of these newer products. The research laboratories of the chemical industry are steadily creating new products. Molded furniture from plastics, non-breakable and flexible glass, glass tile and numerous other products are being developed.

SIDNEY KIRKPATRICK,
*Chemical & Metallurgical Engineering*

# THE BUSINESS TREND




| 1929 Thousand Tons | |
|---|---|
| Oct. | 4,086 |
| Sept. | 3,902 |
| Aug. | 3,658 |
| July | 4,088 |
| June | 4,257 |

| 1930 Thousand Tons | |
|---|---|
| Oct. | 3.481 |
| Sept. | 3,424 |
| Aug. | 3,580 |
| July | 4,022 |
| June | 3,968 |

## Business Drifts Aimlessly at Low Level

BUSINESS is drifting along at low levels without important changes in sight in the immediate future. The majority of industrial leaders expect no definite upturn until after the first of the year. Notwithstanding the fact activity is restricted, sentiment is slightly better than it was a month ago.

Unfilled orders of the United States Steel Corp. on Oct. 31 totaled 3,481,763 tons, a gain of 57,425 tons over the corresponding figure for Sept. 30. This is the first improvement reported since July, 1930, when an increase of 53,991 tons was registered. Last year the unfilled orders at the end of October exceeded 4,000,000 tons by a slight margin. The figure rose gradually without a break until March 31, 1930, after which it declined in three consecutive months.

### Records of Business Activity Give Colorless Picture

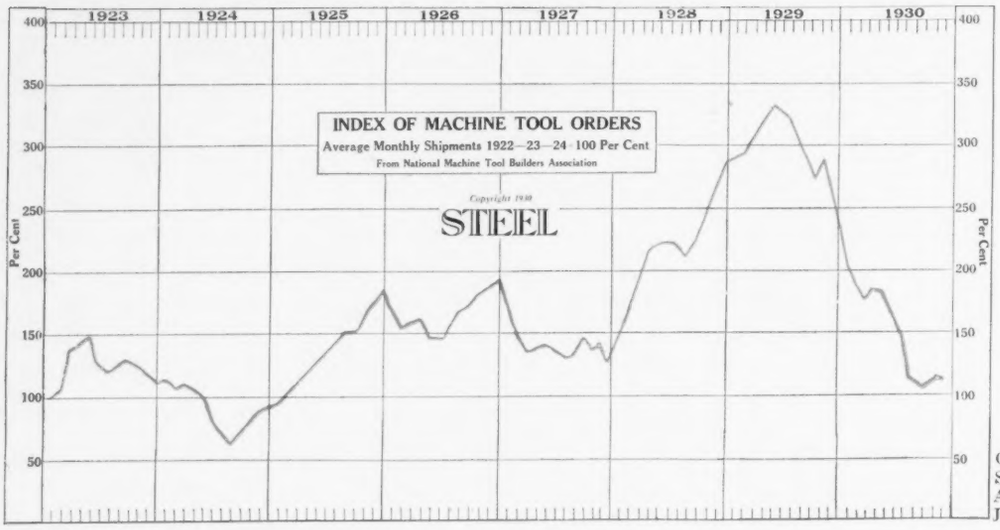
Machine tool orders, as indicated by the index compiled by the National Machine Tool Builders' association, dropped slightly last month. This was generally predicted, owing to the sharp recession in inquiry which developed after the brief fall spurt.

Freight car loadings, which are considered a fair indicator of general industrial activity, dropped slightly in the last week for which reports are available. However, the manner in which freight traffic held up throughout October is encouraging. From now on the weekly figures will be matched against those of a period in 1929 when the weekly volume was dropping off sharply. The comparisons should become more favorable as time goes on—unless, of course, current loadings taper off at a more-than-seasonal rate.

The building situation remains unchanged. The reports for October for 37 eastern states revealed a disappointing decline, although the volume of residence construction showed a gain. This was reflected in the report of building awards by value. The value of awards in October was greater than in September, but the totals when reduced to a basis of square feet, were lower in October than in the preceding month.

### Commodity Prices Still Fluctuate Within Narrow Limits

Chief attention still centers on the price situation. In iron and steel, it is interesting to note that STEEL's composite of 14 products remained stationary last week for the first time since late in August. Copper has firmed slightly since its last sharp decline. Wheat and cotton prices have dropped fractionally in the past week. In general the various indices of prices for all commodities have remained stationary or have slipped off a few points. Fisher's index stands at 82.2 as compared with 82.4 in the preceding week. Apparently nothing has occurred to lift business out of the status of price uncertainty which has prevailed for several months.



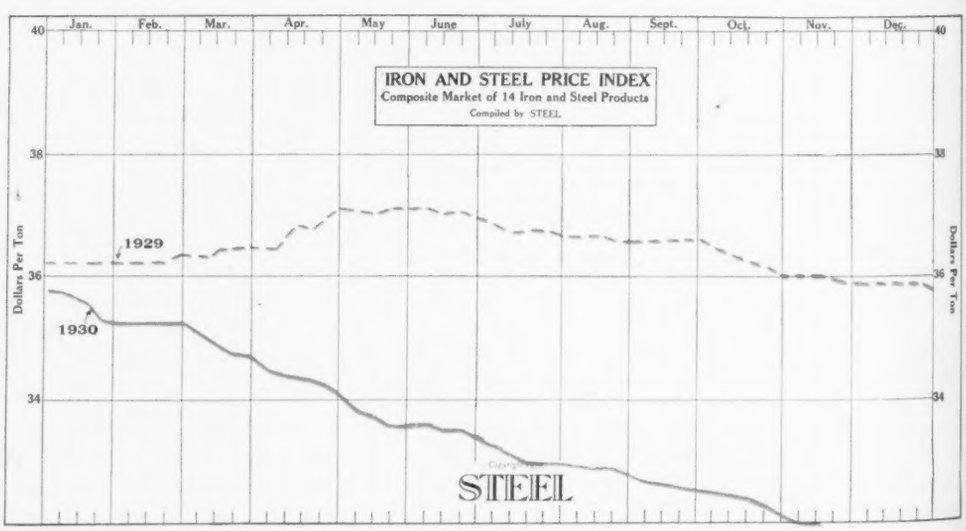

| | 1930 | 1929 |
|---|---|---|
| October | 113.3 | 287.0 |
| September | 113.6 | 265.8 |
| August | 110.2 | 286.1 |
| July | 117.3 | 294.8 |

## Machine Tool Index Holds Steady, but Immediate Prospect Is Uncertain

Hesitation of buyers in placing definite business has prevented the market index in machine tool orders from continuing the slight gain made last month. The three months' moving average compiled by the National Machine Tool Builders' association at the end of October stood at 113.3, remaining practically stationary after turning upward last month for the first time since April. Exactly one year ago the average made a single rise, to interrupt the downward trend from 330, which in April, 1929 was by far the highest point in recent years. Indications early in November are that little buying will be done any more in 1930, but that needs thus accumulated may bring about a reaction early next year.

## Composite of Iron and Steel Prices Checked in Downward Course

After falling over 3 per cent in sixty days to a level about 11 per cent below that of a year ago, STEEL's composite of iron and steel prices found a point of resistance in the downward trend, and on Nov. 12 stood at $31.98, the same as in the previous week. The last drop was from $32.06, the figure for Oct. 29. The last occasion on which the receding index was checked temporarily was when the composite stood at $33 for August 14 and 21. Three months ago the monthly average was at $32.99. Indications of a minimum price on certain items last week help to prevent the composite from going much lower, although fluctuations within a narrow range at the present low level may be expected.

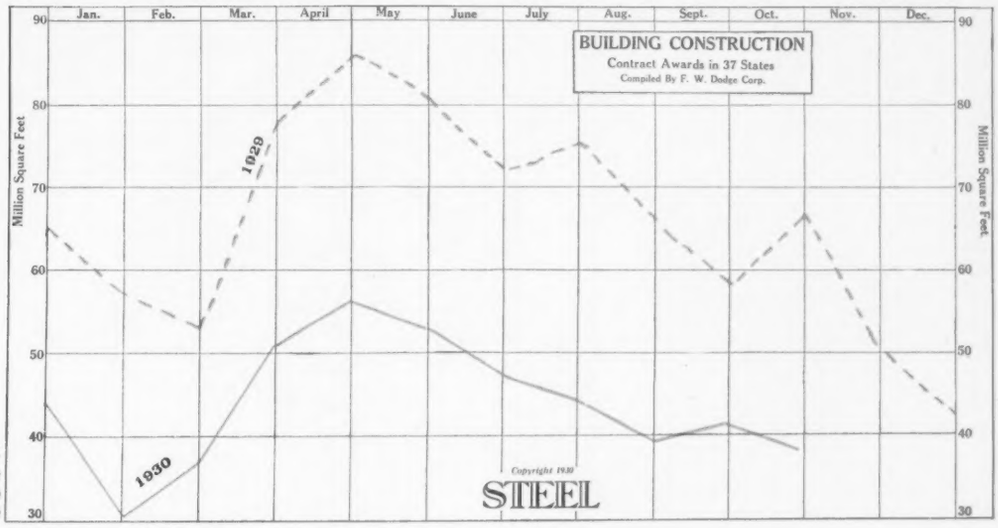



**Weekly Figures**

| | |
|---|---|
| Nov. 12 | $31.98 |
| Nov. 5 | 31.98 |
| Oct. 29 | 32.06 |
| Oct. 22 | 32.14 |
| Oct. 15 | 32.24 |

**Monthly Averages**

| | |
|---|---|
| October, 1930 | $32.26 |
| September, 1930 | 32.65 |
| August, 1930 | 32.99 |
| July, 1930 | 33.21 |
| October, 1929 | 36.23 |



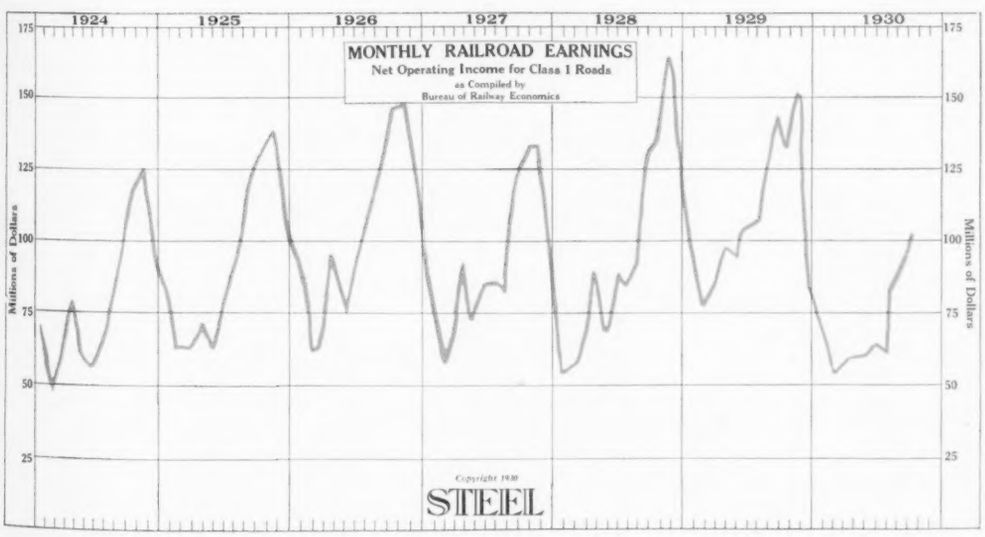

| Square Feet | |
|---|---|
| October, 1930 | 39,483,700 |
| September, 1930 | 41,193,300 |
| October, 1929 | 65,609,200 |

## Construction Awards Fail to Continue Late Seasonal Uptrend

The slight seasonal gain made during September in the volume of construction awards was not held during October, according to the report of the F. W. Dodge Corp. for 37 states. Construction awards during the month totaled 39,483,700 square feet, a decrease of 1,709,600 from September, and even lower than the figure for August, which was 39,932,500 square feet. October of last year witnessed the award of 65,609,200 square feet, a distinct gain over September of that year. In terms of valuation an expansion was made during last month, due, no doubt, to a continuation of an increase in residential building, which ordinarily registers a higher value in proportion to space involved.

## Monthly Railroad Earnings In September Gain 8.9 Per Cent Over August

Earnings of Class I railroads during September reached $104,078,334, a gain of $8,474,411 or 8.9 per cent over August, which was a lower rate of increase than that of August over July. In comparison with September, 1929, earnings were down 22.5 per cent, being the lowest for any September since 1923. However, the gain during the month compared with a decline for the same month in 1929. For the first nine months of 1930 earnings were $659,427,561, a decrease of 31.5 per cent from last year, due particularly to the fact that net operating income during the early months this year was more than seasonally low, and was delayed for several months in its annual upward march.




| Million Dollars | 1930 | 1929 |
|---|---|---|
| Sept. | 104.1 | 133.9 |
| Aug. | 95.6 | 141.7 |
| July | 82.7 | 122.8 |
| June | 68.8 | 105.8 |

# THE YEARBOOK

ANNUAL
STATISTICAL
ISSUE

## JANUARY 1, 1931

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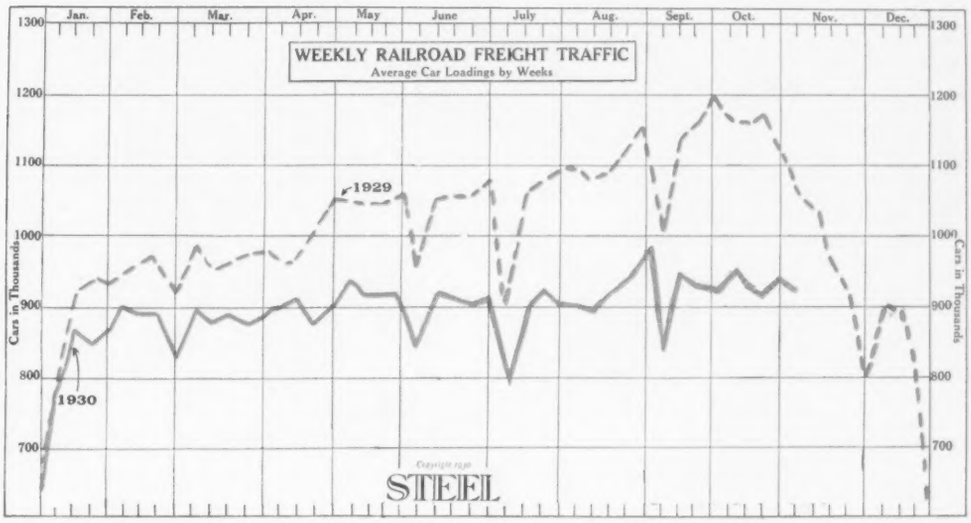
**1930**

| | |
|---|---|
| Nov. 1 | 934,640 |
| Oct. 25 | 959,335 |
| Oct. 18 | 931,085 |
| Oct. 11 | 954,874 |
| Oct. 4 | 972,492 |

**1929**

| | |
|---|---|
| Nov. 1 | 1,072,234 |
| Oct. 25 | 1,134,359 |
| Oct. 18 | 1,185,564 |
| Oct. 11 | 1,179,540 |
| Oct. 4 | 1,179,047 |

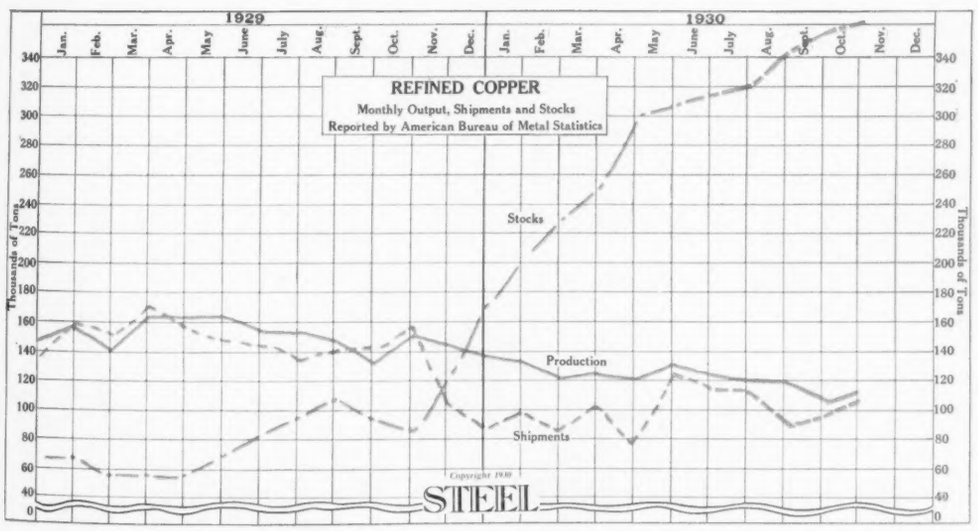

WEEKLY RAILROAD FREIGHT TRAFFIC
Average Car Loadings by Weeks
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.
1300 1200 1100 1000 900 800 700
Cars in Thousands
1929
1930
STEEL

## Freight Car Loadings Drop Slightly, but Seasonal Decline Is Delayed

Weekly railroad freight traffic has fluctuated uncertainly in the past few weeks, but has delayed making any major seasonal declines. Loadings of revenue freight cars during the week ended Nov. 1 dropped to 934,640 cars, as compared with 959,335 cars for the week ended Oct. 25, but still above the total for Oct. 18, or 931,085 cars. For the week in 1929 comparable to that ended Nov. 1, a total of 1,072,234 cars were loaded, but at that time the figures were on a sharp decline which was to become especially evident throughout November. Although still much below the levels of last year, freight car loadings have refrained from imitating the sharp seasonal decline of late 1929.

## Refined Copper Shipments Gain Again, Holding Down Increase in Stocks

Shipments of refined copper gained for the second time in October, and as production and shipments neared equality, stocks made the smallest gain registered in any month during the past twelve. Stocks at the end of the month stood at 364,930 tons, only 4280 tons more than in September, but more than four times those of October, 1929. Production amounted to 118,229 tons as compared with 116,004 tons in September, but due to the difference in the length of the month the daily rate became 53 tons less than in September, setting the lowest mark since June, 1927. Shipments totaled 113,949 tons, or 3676 tons per day, as compared with 3435 tons per day in the previous period.




**Stocks**

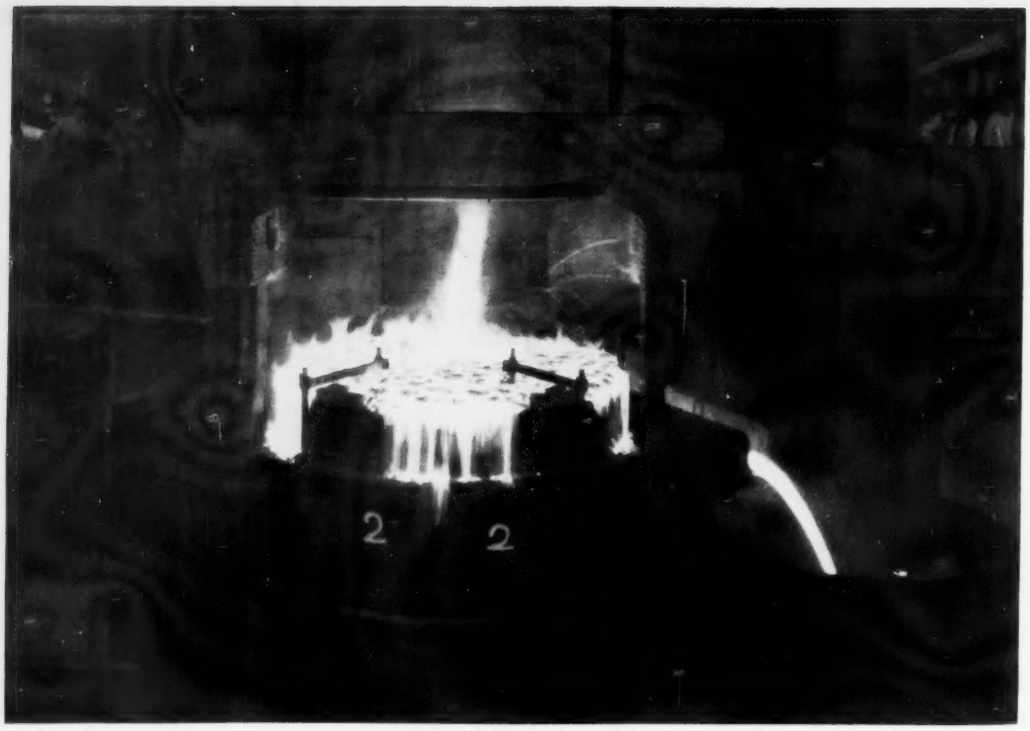
| | |
|---|---|
| October, 1930 | 364,930 |
| September, 1930 | 360,650 |
| October, 1929 | 88,401 |

**Production**

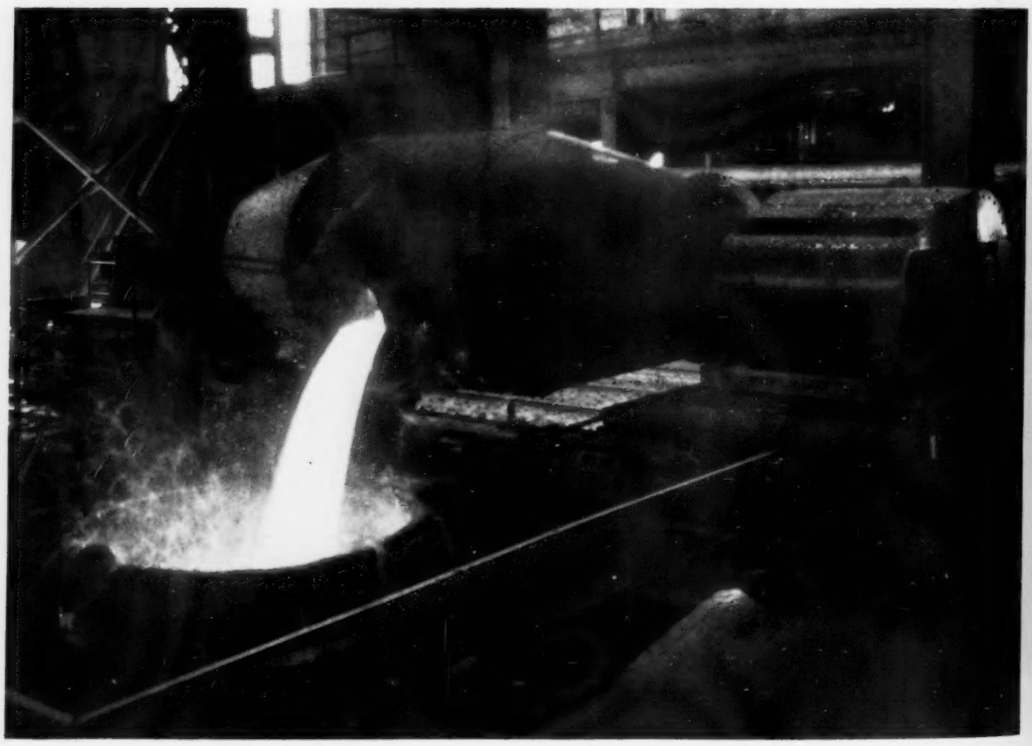
| | |
|---|---|
| October, 1930 | 118,229 |
| September, 1930 | 116,004 |
| October, 1929 | 152,840 |

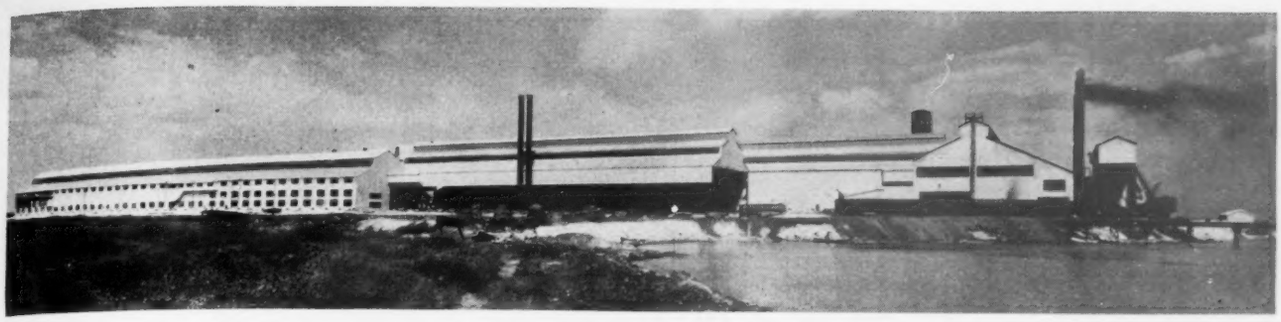
**Shipments**

| | |
|---|---|
| October, 1930 | 113,949 |
| September, 1930 | 103,042 |
| October, 1929 | 159,190 |



NEARING the end of an open-hearth tap. Slag, which flows into the 150-ton ladle along with the metal, is ejected into a cinder thimble by the spout at the right. Below may be seen molten iron being poured from a mixer-type ladle into a 75-ton ladle ready for the open hearth.





*Plant of Great Lakes Steel Corp., Ecorse, Mich., which will produce 500,000 tons of rolled commodities annually*

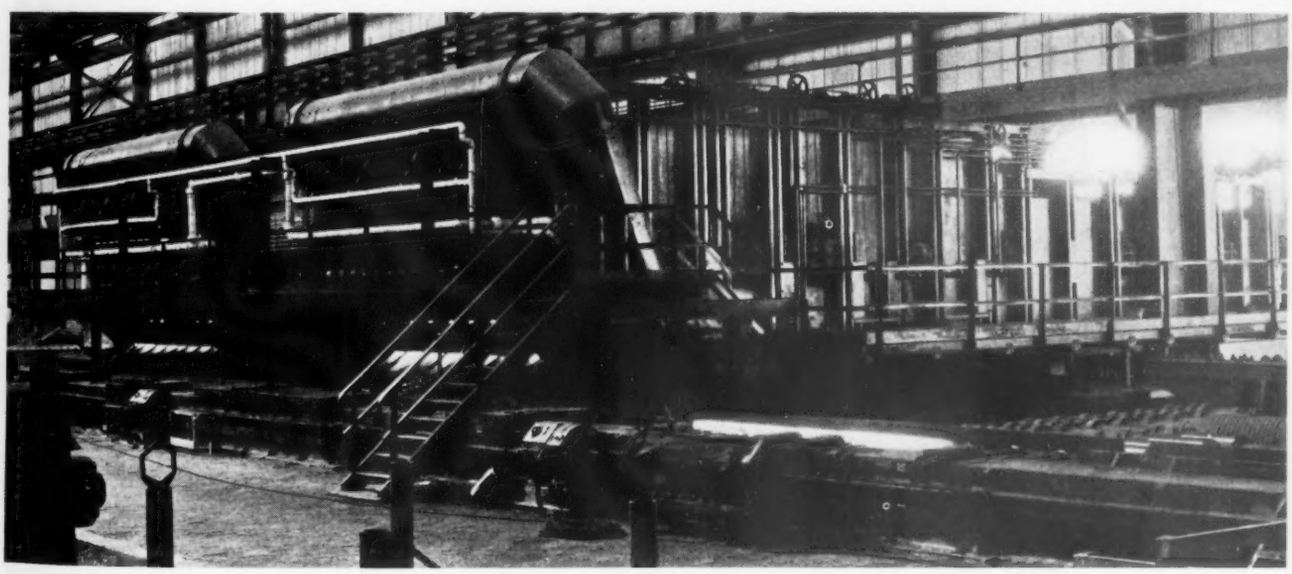
# Rolls Finished Steel at Door of Automotive Industry

LOCATING a steel plant within close proximity of the point of consumption has a marked advantage from the standpoint of freight rates over plants in outlying districts, but only in event that raw materials can be assembled on an economically sound basis. This factor was considered carefully by directors of the new Great Lakes Steel Corp. in choosing a site for its plant to serve the diversified market for finished steel commodities in the Detroit area.

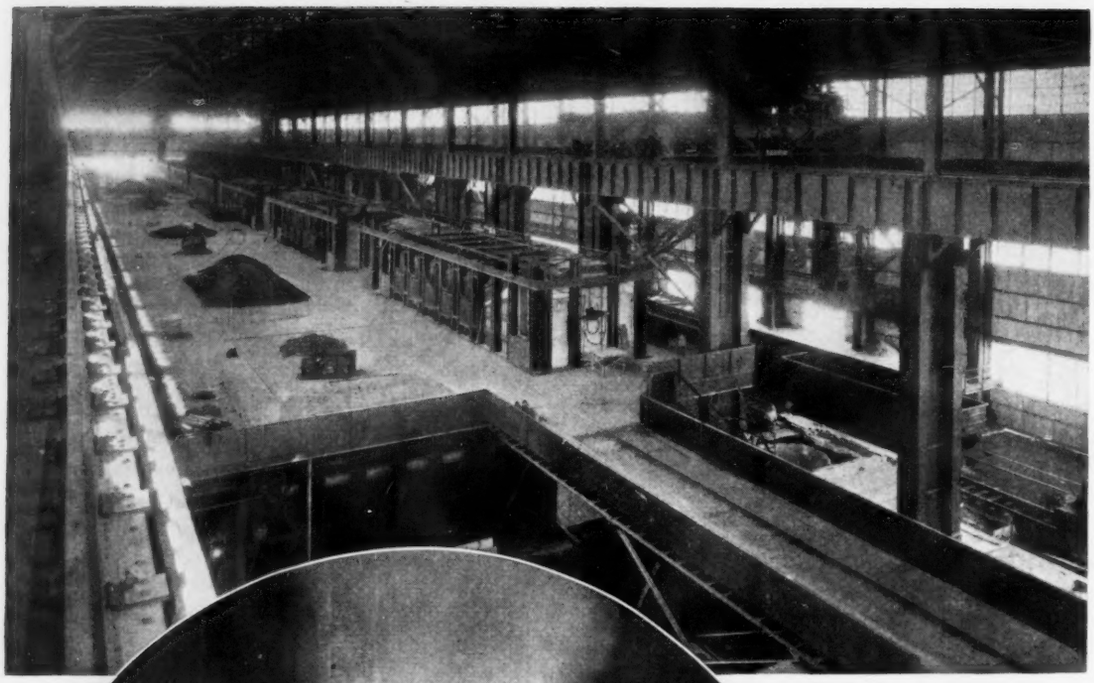
National distribution from Detroit has been proved by the automotive industry and the advantages of a steel mill located in that city with water in addition to rail transportation makes possible the extension of the sale of steel products from Detroit to the Atlantic seaboard and export markets. Development of the St. Lawrence waterway will permit the delivery of Detroit-made steel in New York or Philadelphia on a basis that will compare favorably with the Pittsburgh district.

The scrap market in Detroit also is favorable. Limestone of high quality is available by water transportation. While the rate on coal to Detroit is higher than to those mills located near the mines, this disadvantage is offset by freight advantages on other raw materials and finished products. The development of oil refinery operations in the Detroit zone has eliminated in a large measure the fuel disadvantage of the freight differentials on coal.

With these basic factors established, therefore, a site located 6½ miles from the Detroit city hall, in the village of Ecorse, Mich., was purchased. The property consists of a rec-

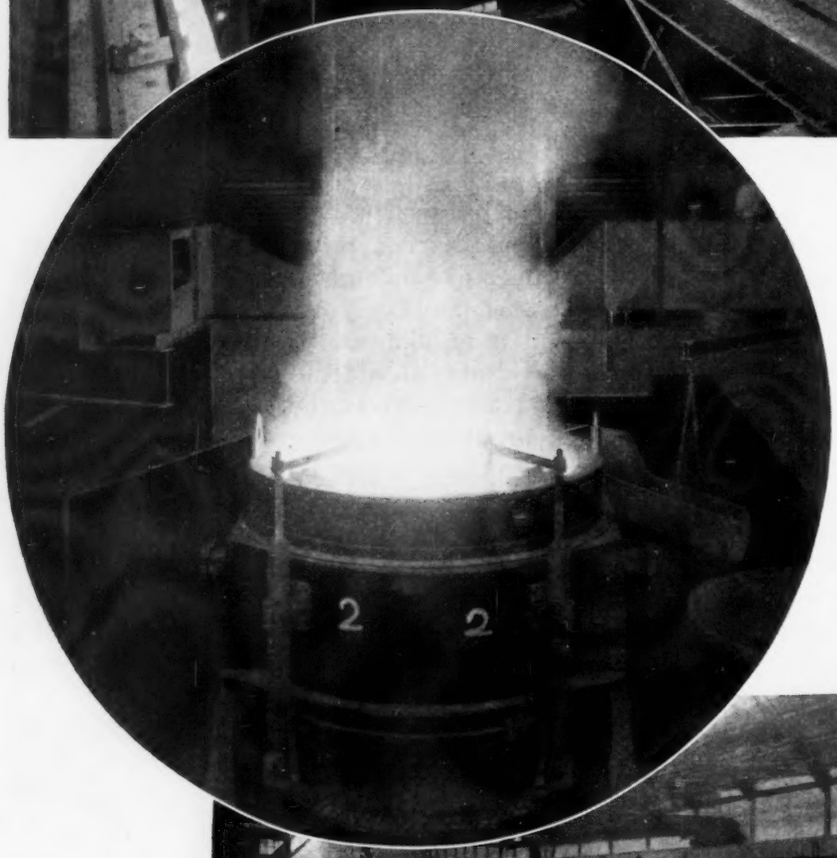


*Two reheating furnaces which supply hot slabs to the 20-inch strip mill. Each furnace has a capacity for heating 40 tons of steel an hour*



*Charging aisle in the open-hearth department which includes six oil-fired stationary furnaces rated at 150 tons capacity*

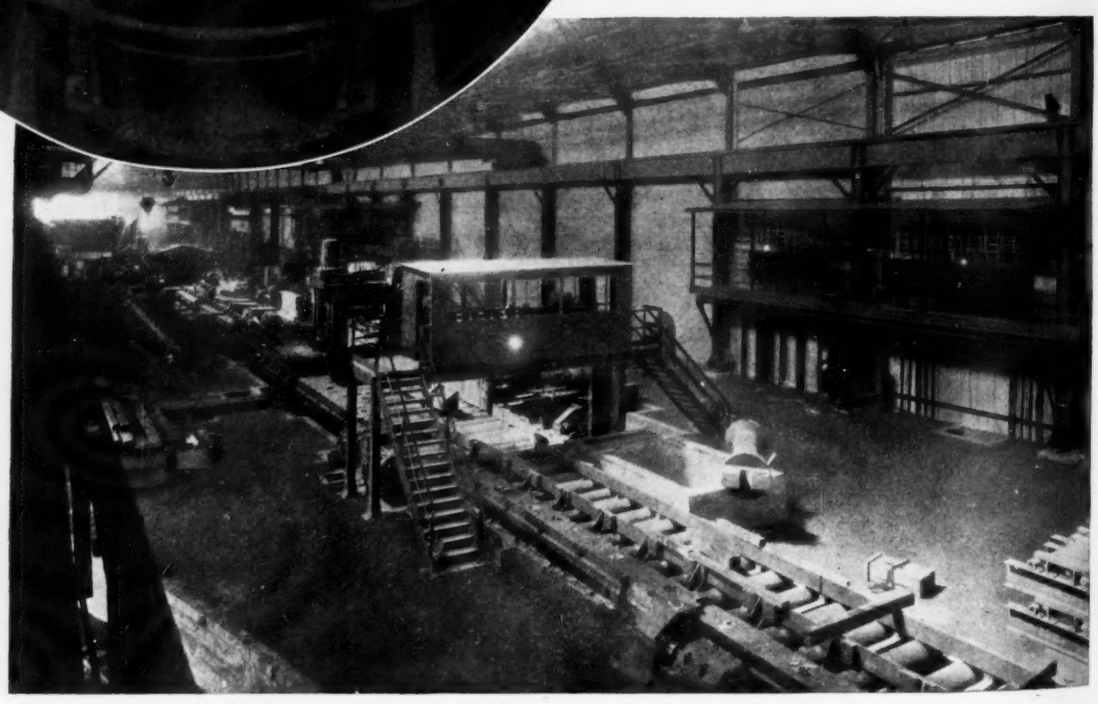
◆



*First heat of basic steel being tapped from one of the open-hearth furnaces*

◆

*40-inch blooming mill which supplies slabs to the 20-inch hot strip mill and blooms to the 21-inch sheet bar and billet mill*



tangular block of 225 acres with a frontage on the Detroit river of about 2800 feet. It is bounded on the north by a navigable slip between its property and the Nicholson Terminal & Dock Co., on the south by the properties of the Michigan Central Railroad, and on the west by the Michigan Central, and the Detroit, Toledo & Ironton railroads. The plant is served by both railroads and the water facilities will permit dockage of lake vessels.

In September, 1929, the National Steel Corp., Pittsburgh, was formed, being a merger of the Great Lakes Steel Corp., organized in Detroit early in 1929; the M. A. Hanna Co., Cleveland; and the Weirton Steel Co., Weirton, W. Va. This affiliation was of considerable advantage in that the Great Lakes company was assured a supply of hot metal from the two nearby blast furnaces of the Hanna company.

The original program of the Great Lakes Steel Corp. consisted of erection of an open-hearth plant, blooming mills, bar mills and a continuous strip mill. This program subsequently was extended to include two merchant mills. The plant, when the present construction program is complete, will have a capacity of 500,000 tons annually of billets, sheet bars, forging bars, strip, automobile spring steel, rim sections, bumper steel, window sash sections, concrete bars and small angles and channels.

The property as originally assembled contained three slips. The filling of two of these slips and raising the general elevation for proper sewerage system and track facilities have been carried out by hydraulic sand fill. The first structural steel was set Oct. 28, 1929, and almost 10 months later, or Aug. 23, 1930, the first steel was poured.

### Includes Six Basic Units

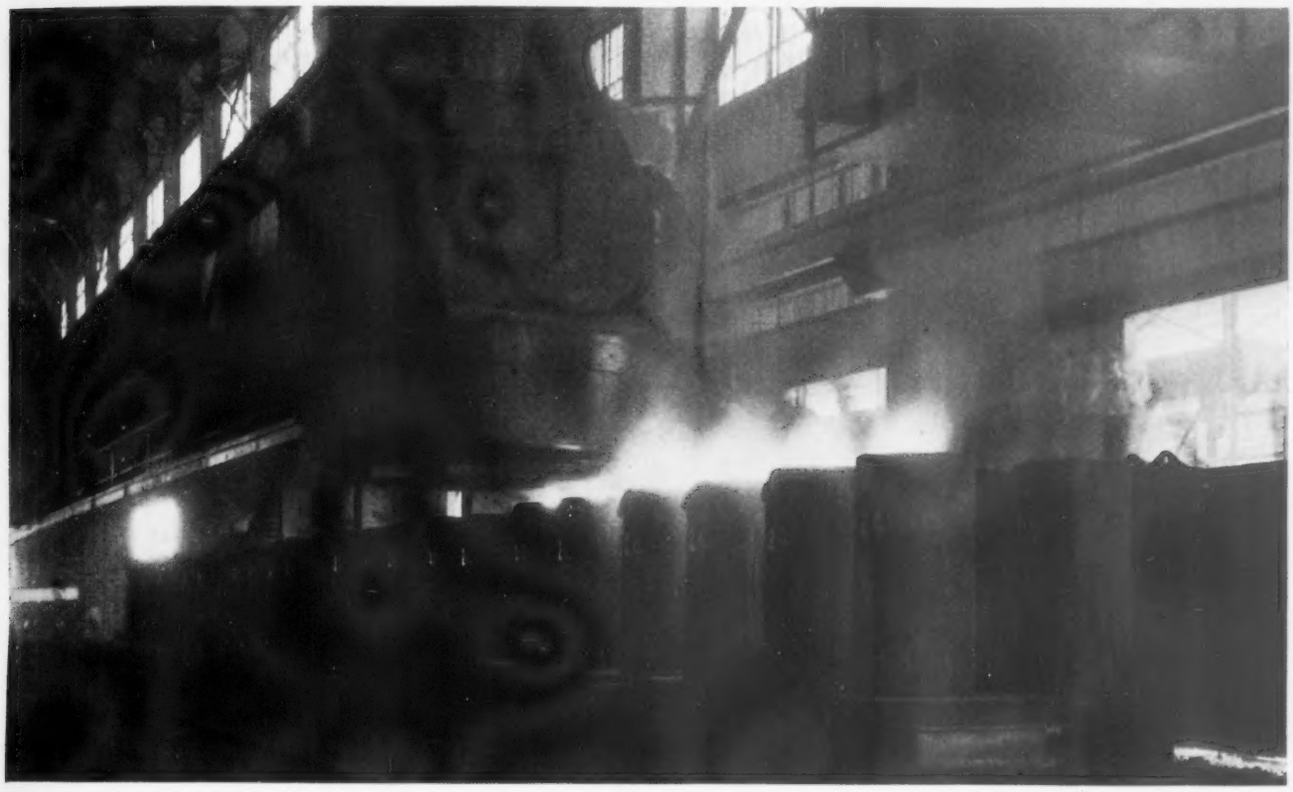
The steelworks consists at present of six 150-ton rated capacity open-hearth furnaces housed in a modern steel building 208 x 770 feet. The furnaces are equipped with waste-heat boilers and induced draft fans, each furnace discharging into a brick-lined steel stack, 180 feet high. Particular attention was paid to the design of the flues, the checkers and the elimination of heat losses whereever possible. The furnaces are fired with oil. All equipment is installed with exception of gas producers, so that it can be fired with hot producer gas if anytime this gas would show more economical production.

The charging equipment consists of two 7½-ton low-type floor charging machines and one 125-ton overhead electric traveling crane. In the pouring aisle are two 250-ton steel ladle cranes for handling hot metal from the furnaces to the ingot molds. Hot metal from the blast furnaces of the Hanna company at Zug Island, less than 2 miles distant, is conveyed to the open-hearth plant over the D. T. & I. railroad in 110-ton mixer-type cars by a diesel-electric locomotive of 70-tons capacity. Hot metal is transferred from the mixer ladle to 75-ton ladles, weighed and charged into the open-hearth furnaces as required.

In the north end of the building is located the auxiliary oil-fired boilers. The steam requirements for the plant due to the extensive electrification of all equipment, under normal conditions, will be satisfied by the waste-heat boilers at the open hearth, so that the boiler house becomes in effect a reserve unit. Parallel and adjacent to the open-hearth building is a stockhouse, 110 x 700 feet, served by two 15-ton traveling cranes. The stockhouse is covered so that severe winters will not interfere with the regular operation of preparing the furnace charge.

Adjacent to the pouring aisle of the open hearth is the mold yard of steel frame covered construction, 110 x 330 feet, and served by a 15-ton traveling crane. East and in line with the mold yard is the stripper building, 54 x 150 feet, served by a 200-ton ingot stripper crane. The stockhouse, open-hearth building, pouring aisle, stripper building and mold yard have been arranged for continuous flow of material with a minimum of handling.

West of the stripper building and parallel to the Detroit river are located the soaking pit and gas producer buildings. Hot ingots pass from the stripper building directly to the soaking pit building, 113 x 275 feet, where they are charged, prep-



*Pouring aisle in open-hearth department showing a 150-ton hot metal ladle equipped with two pouring nozzles*

aratory to rolling, into four 4-hole soaking pits of the regenerative type. The pits, served by two 7½-ton pit cranes, are equipped with suspended-arch covers, having the drive motors mounted on the cover frames. All controls for the pits are concentrated on one control platform which extends the length of the building on the river side.

Hot producer gas is furnished the pit furnaces by three fully-automatic producers housed in a building 23 x 54 feet and served by a 5-ton overhead traveling crane. At right angle to the pit furnace building and parallel with the open-hearth building is the blooming mill building, 95 x 725 feet, served by a 50 and a 20-ton overhead traveling crane.

In this building is installed a modern 40-inch reversing blooming mill driven by a 7000-horsepower motor. Steel converted to blooms and slabs by this unit is cut to multiple lengths by an electrically-driven clutchless shear which starts and stops for each cut. The shear is capable of making 14 cuts a minute. Blooms, still containing their initial heat, pass to the 21-inch continuous sheet bar and billet mill which includes nine 2-high horizontal and two edging stands. The first seven stands are driven at a constant speed by a 4000 and a 5000-horsepower motor. Each of the last two stands is driven by a 2000-horsepower direct-current motor which affords adjustable speeds.

Sheet bars are delivered from the 21-inch mill at speeds as high as 900 feet a minute. An electrically-driven flying shear, located in front of the finishing stand, cuts the bars "on-the-fly" into uniform lengths. This imposes rather exacting requirements on the electrical equipment because the needed accuracy of cutting is within 0.5 per cent. In addition, the shear successfully crops the front end of each bar. The billets or bars, in 30-foot lengths, are carried on a run-out table to the bar piler and the cooling bed. Each table roller is driven by a small squirrel-cage induction motor, built inside the roller itself. The speed of each roller is adjusted simultaneously by varying the frequency of the alternating power.

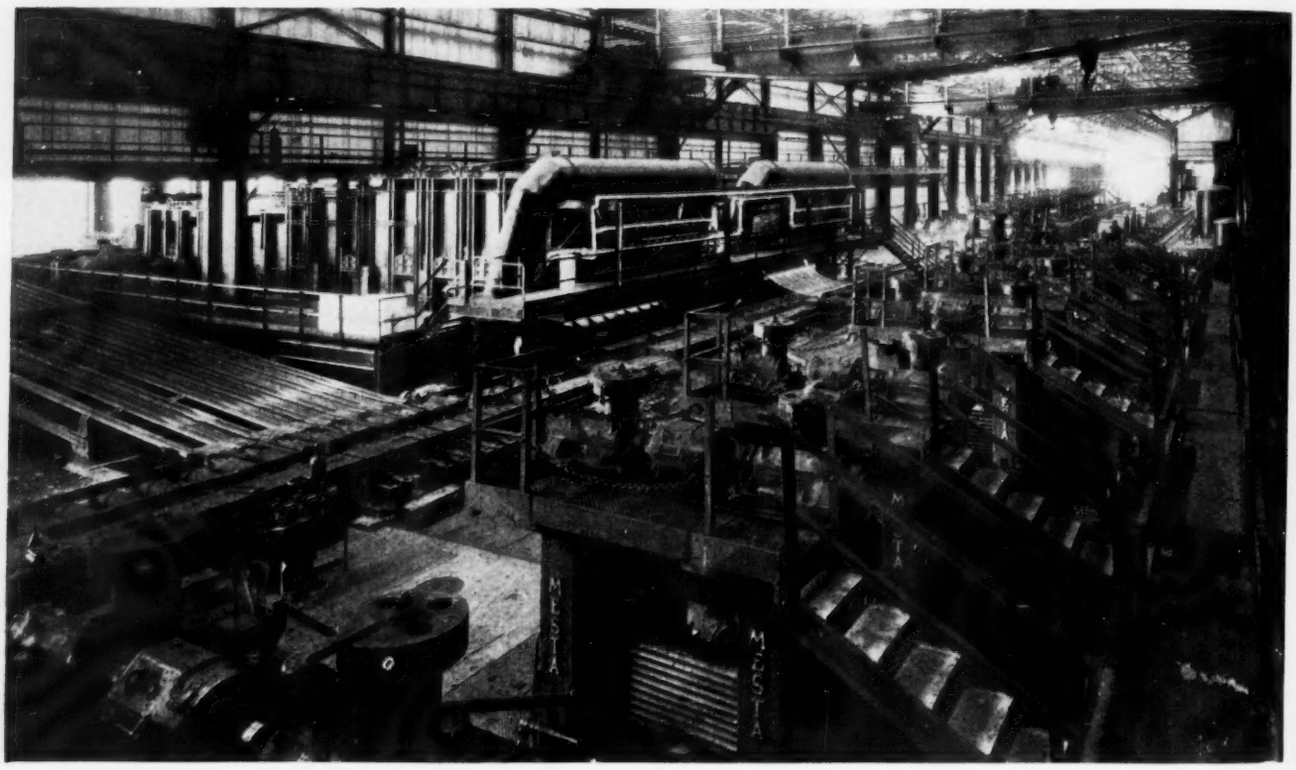
Slabs sheared on the 800-ton shear, instead of going through the 21-inch continuous bar mill, may be reheated in one of two special furnaces, each having capacity for heating 40 tons of steel an hour, and, then delivered to the 20-inch hot strip mill. This unit includes four 2-high, six 4-high and three edging stands driven by one 1200, one 1600, one 2200, one 3000 and six 2000-horsepower adjustable-speed motors. The layout permits rolling slabs direct from the blooming mill, or from the reheating furnaces depending upon operating conditions.

The same piece of metal may be in several stands at the same time. The mill is capable of rolling strip in minimum thicknesses of 1/16-inch and in maximum widths of 32 inches. Material may be delivered from the last stand at a speed of 1200 feet a minute and may be cut on the fly to commercial lengths with an accuracy of 1/16-inch on 8 or 10-foot lengths. To obtain such precision, the flying shear is driven by a 125-horsepower synchronous motor, supplied with power from a synchronous generator. The latter is connected to the 2000-horsepower direct-current motor driving the stands. This provides a synchronous tie between the mill and the shear, without which such accuracy in shearing would be impossible.

If coiled material is desired, the strip passes from the mill over a long runout table, also built with individually-driven motor rollers, to two coiling machines. These units also are equipped with motors built-in integrally with the coilers themselves. A normalizing furnace is housed in the strip mill finishing building to insure the proper heat treatment of the product before shipment. Parallel with the finishing mill building is a building, 104 x 600 feet, which will serve as a storage for the coiled and cut-to-length material from the strip mill. Here are located the necessary roller levelers, shears and oiling machines.

At the end of the bar and billet storage yard, 109 x 475 feet, and parallel with the open-hearth building is located the No. 1 merchant mill which will include 16 stands of rolls and

(*Concluded on Page* 63)




*21-inch continuous sheet bar and billet mill is shown in right foreground. The two slab reheating furnaces serve the 10-stand hot strip mill in the distance*

# See Wider Use of Acetylene Welding and Cutting

GREATER consumption in the industry as a whole, and wider application of its processes in cutting and welding this year was reported at the thirty-first annual convention of the International Acetylene association in the Congress hotel, Chicago, Nov. 12-14. The industry was described as restless to go ahead, and on the threshold of activities in new fields. It has reached the eighth place in American industry, it was asserted.

Emphasis was placed on the possibilities of growing consumption of steel through welding. It was predicted that within five years great strides in all-steel residential building will be made, and that the majority of residences under construction then will be built of welded steel. C. A. McCune, Welding Engineering & Research Corp., New York, in opening the sessions as president, stated that 2,000,000 to 3,000,000 tons annually should be added to steel consumption within half a decade by residential construction alone. He predicted steel roofs and side walls, and decorative features of sprayed metal and polished alloy steel exteriors.

### Convention Marks Anniversary

The convention marked the thirty-first anniversary of the association and that of the production of calcium carbide on a commercial scale. Mr. McCune pointed out the expanded markets in the last year, including the synthetic chemical and fertilizer fields, and in farm areas for lighting and mechanical refrigeration.

The Morehead medal for 1930 was awarded to J. B. Johnson, Wright field, Dayton, O., chief of the material branch of the war department, for original research and development in welded aircraft construction.

Taking issue with the "bitter enders," who hold there must be complete deflation or collapse before business can rise from the slump, Marc A. Rose, editor of *The Business Week*, New York, analyzed business conditions. "In other words, are we to destroy what we have achieved in the last seven years so that we may have the 'sound progress' of building it up again?" he asked. "And then, it is perfectly obvious, we must destroy it again later, for the reasoning will be just as sound in 1937 as in 1930."

Declaring that the world plight is due to a ghastly wreck in the delicate machinery of international credit, creating barriers to the free exchange of goods and credits, and representative of the ancient struggle between debtor and creditor, he said overproduction does not exist nor is it the cause of the slump.

Financial leadership has failed sadly, Mr. Rose said. He suggested the expansion of the power of the federal reserve system, and an increase of the banking resources of the country. "What now is required," he said, "is to increase banking resources of the country. "What now is required," he said, "is to increase banking resources by reversing the previous course and buying bonds instead of selling them. What amount of bonds it would be necessary to purchase in order sufficiently to restore the commodity price level, it is impossible to say definitely. A comparatively small amount, say $500,000,000 probably would be sufficient."

Not until there is a revival of the long-term money market can the country expect definite forward movement, he added. He called the depression the lowest of any in activity, but not in human suffering. He said business, nevertheless, has been between 80 and 85 per cent of normal, allowing for the 4 to 5 per cent yearly growth which ought to take place, or around 75 per cent of the biggest boom year ever known—the 1928-29 peak of about 115 per cent. He declared the Young plan for German reparations payments did not provide for possible fluctuations in the value of money as did the Dawes plan, thus helping to create depression.

Vast possibilities of steel consumption were emphasized by Eric H. Ewertz, consulting welding engineer, New York, in discussing welding in the construction of residences. He outlined two types of construction, one in which steel members are assembled on the ground, permitting large sections to be raised and set, and the other type in which sections light enough for two men to handle are fabricated in the shop ready for erection. Details in both were described as identical. He pointed out the average all-welded steel home of six rooms will require about 15,000 pounds of steel, including metal lath, about 800 linear feet of welding, and some 40 pounds of welding wire. Sheet steel consumption also was declared important. Assuming that 175,000 homes yearly are to be of steel construction, Mr. Ewertz said consumption would be 1,312,500 tons of sheet steel, 3700 tons of welding wire, 49,000,000 cubic feet of oxygen, and 46,000,000 cubic feet of acetylene, including also about 3000 welding torches.

### Welding Code Used Widely

The structural welding code of the American Welding society's committee on building codes has been adopted by nearly 100 cities and towns and provides sanctioned specifications for applied structural welding and gas cutting with practical data, it was pointed out by H. H. Moss, engineer, Line Air Products Co., New York. "Structural welding practices are being leveled out throughout this country, and the characteristics of development in this field are more along the lines of economic design than in details concerned with unit stress and weld technique," Mr. Moss said: "The process of standardization is in operation. The accrued welding tonnage in buildings and bridges, should all data be assembled, would approximate 100,000 tons, involving structures from the simple one-story to the 20-story building."

Prof. James R. Griffith, structural engineering department, Oregon State college, Corvallis, Oreg., outlined experiments in his department on the gas-welded structural joints consisting of welded plates sawed into 1-inch strips for convenience in testing. Sand placed on the plate takes definite geometric forms in accordance with the soundness of the weld, when the plate is rapped. He

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described the testing of welds through the use of an ordinary physician's stethescope with an amplifier and loud speaker magnifying the sounds. Results have been variable but it is expected the tests are leading to more definite principles. Professor Griffith found that unskilled welders obtain creditable results in gas welding.

More general use of fusion welding of buildings and other structures was seen by F. Eder, engineer, Robert W. Hunt Co., New York, in discussing inspection of welding steel framing in buildings. He stressed the supervision of the actual welding operation by inspectors, suggesting features that could be observed in gas welding. He pointed out the program of nondestructive testing of materials has been encountered in many other branches of engineering research and that solutions have been found. He added that the appearance of the surface of the completed weld may be taken as a guide as to the skill of the welder, but cannot be used as a final criterion of the weld's soundness. Random tests in addition to the supervision of actual welding were suggested.

**Welding Rail Ends Important**

S. E. Tracy, track welding supervisor of the Chicago, Burlington & Quicy railroad, compared the oxyacetylene and the electric arc methods in the welding of battered rail ends, which he described as one of the most important problems of railroad operation. He stated it is accepted that the battered rail end is the cause of the largest part of the trouble and expense in track structure maintenance. He said railroad engineers are agreed upon the economy of building up battered rail ends to increase the life of the rail and to decrease wear upon track fastenings, and also minimize the wear and tear on equipment. Certain alloys containing chromium, he said, have proved the most suitable for the building up of rail ends, as they provide required hardness and make welds sufficiently tough to prevent breakage under hammer of the wheels. This low-chromium alloy steel entails forging during welding but no subsequent heat treatment, he pointed out. Mr. Tracy stated that since 1922 his road has welded approximately 1,092,000 rail joints, with a steadily decreasing cost from an average of $1.32 a joint in the first years to 76.7 cents for this year up to Sept. 1. Reduction in cost was due to lower prices of gases, efficiency of welders, improvement in procedure, and variation in rail ends welded.

Development of oxyacetylene welding in various pipe fields was explained by R. E. Fritsch, vice president of Tube Turns Inc., Louisville, Ky. Welding in the petroleum field has been applied as in no other industry, he said, and one of the most interesting features of the long cross-country oil lines has been the fabrication and erection of pipe line manifolds at the line pumping stations. He regarded the flexibility of the welded manifold as a decided advantage, the welding permitting changes with a minimum amount of expense and trouble. Twenty-three pumping stations on two large crude oil lines now being constructed will have manifolds fabricated by oxyacetylene welding and cutting. He predicted the next few years will show a marked trend toward cross-country pipe lines for refined petroleum products.

Charles Froesch, general service manager of Fokker Aircraft Corp. of America, Hasbrouck Heights, N. J., described application of welding to the various parts of the airplane, including the production of fuel tanks of 180-gallons each, made of welded aluminum sheets. He pointed out the difficulty in making repairs to welded tubular steel airplane structures to avoid buckling caused by expansion strains near the weld.

Developments in welded aluminum for tank trucks, trailers and semi-trailers of varied sizes and designs was outlined by W. N. Dunlap, metallurgist, aluminum research laboratories, Aluminum Co. of America, New Kensington, Pa. The light weight of aluminum and its alloys, he pointed out, has been an important factor in this adaptation. Practice now was described as tending toward the proved design of steel tanks as a basis of redesign for the aluminum tank, substituting the proper fitness of aluminum plate to

(*Continued on Page* 50)

# Oxyacetylene Welding and Cutting Are Recognized Processes in Industry

APPLICATIONS of oxyacetylene welding and cutting are holding their own against inroads by competitive processes and are looked upon by users as regular production or repair methods. This situation was emphasized by the oxyacetylene committee of the International Acetylene association in presenting its report before the thirty-first annual meeting of the association in Chicago, Nov. 12-14. The report was a follow-up of the extensive survey of 1928 and the 80-page progress report of 1929, these reports constituting the most complete study of oxyacetylene welding and cutting ever printed and revealing to the industry opportunities for expansion "whose ultimate limits at this time are not approached."

The progress report of last week commented on various subjects as follows:

**Acetylene Generators**—The problem of economy in the use of generated acetylene instead of dissolved acetylene is one that merits intensive engineering study on the part of the industry in order to correctly advise the user. A wide market has developed for the small portable acetylene generator type of flood lights.

**Welding and Cutting Apparatus**—Torch designers have produced light-weight torches of large capacity that are better balanced, and as a result production has been increased and costs have been cut. The oxygen manifold system reduces the cylinder pressure down to an almost constant line pressure. During the past year advantage of this double or two-stage reduction has been applied to regulators connected to individual cylinders, and several of the two-stage regulators are now available.

**Steel**—The most active application of steel from the welding standpoint was the construction of numerous pipe lines for conveying oil, gas, or gasoline. This year has been characterized by a notable increase in diameter of pipe and more particularly by the use of higher strength steel. Greater tensile strength, averaging 65,000 pounds per square inch, has increased the consumption of higher strength welding rods. A number of high strength steels have been introduced and are being used for pressure vessels of both fired and unfired type, and for locomotive fireboxes.

**Chromium Alloys**—More attention is being given each year to the weldability of the alloys, and suitable changes are being made in their composition and the composition of the welding material.

**Copper and Copper Alloys**—A new process of copper welding was originated in Germany and is being introduced in the United States. It is believed this process includes the use of a special copper welding rod.

**Aluminum**—Progress in aluminum welding has been centered in the increased use of the aluminum silicon welding rod, which has good flowing properties for welding aluminum forgings or castings.

**Research in Gas Welding and Cutting**—Research is the foundation upon which all progress is based, and no industry in the entire field of met-

# And Now—The World's First Anti-Friction Locomotive Timken Bearing Equipped

Another tough job for Timken Bearings—but Timkens are licking it just as they have licked Industry's toughest jobs in all types of machinery!

For the first time in the history of world railroading, a locomotive has been placed on a full anti-friction basis, and Timken is proud to have the privilege of pioneering this great forward step in the interests of American railroad advancement.

The Timken locomotive pictured above was designed and built for the sole purpose of demonstrating the advantages of roller bearings as applied to motive power.

It has been placed in service on a strictly non-revenue basis, and is being loaned without charge to railroad companies desiring to determine its operating characteristics under their own conditions.

Every wheel turns on Timken Tapered Roller Bearings—front truck wheels, driving wheels, trailer truck wheels and tender truck wheels.

There are 32 Timken bearings in the wheels and booster, and in addition Timkens are used in the speed driver of the valve pilot and in the train control governor.

Another revolutionary feature of this locomotive made possible by the higher rotative driving wheel speeds secured through the use of Timken Bearings, is the fact that it can handle fast freight and passenger trains with equal efficiency, having the necessary power and speed for both purposes.

All of the Timken benefits which users of Timken-equipped industrial machinery have enjoyed for years are reflected in the Timken locomotive, namely, friction elimination, lubrication economy, power conservation, radial, thrust and combined load capacity, extended machine life—modern anti-friction necessities that only Timken Bearings can provide. Don't you want these same enduring economies in every piece of equipment you operate? The Timken Roller Bearing Co., Canton, Ohio.

**TIMKEN** *Tapered Roller* **BEARINGS**

als is more affected than that of welding and cutting. The effect of pressure and temperature on metals is being studied under loads of 176,000 pounds per square inch, and at a temperature approaching absolute zero. Further research must show economical methods of joining, severing, or shaping the new alloys of both ferrous and nonferrous metals.

**Aircraft Industry**—Oxyacetylene welding is used in every aircraft factory in the country. Wing beams up to 20 feet in length, tail surfaces, and complete landing chassis are welded and treated as a single unit. Fuel tanks, pontoons and the fuselage are receiving serious study by those interested in the welding of the strong alloys of aluminum.

**Automobile Production Industry**—Use of the oxyacetylene process for welding, due to subnormal business, is far below normal requirements. No other industry has concentrated more effort in the use of the oxyacetylene process economically.

**Refrigeration**—Large installations, such as commercial ice plants and cold storage houses, have welds numbering in the thousands. The use of household refrigeration units has become one of the big industries of the country and the total amount of welding is impressive.

**Steel Foundries**—Following its successful introduction a year ago, the oxyacetylene cutting chrome-nickel alloy steel casting has continued to grow and is successfully replacing other methods of removing risers from castings. This program has been hampered to some extent by lack of experience and the attempts of operators to apply ordinary cutting practices. A satisfying increase is reported in the proportion of defective castings reclaimed by welding.

**Cast Iron Foundries**—Blow holes and porous shrinkage areas are the common defects remedied by welding, although the building up of lugs and smaller extensions incompletely formed in casting is quite common. Cast iron welding has a more general popularity than the simpler bronze welding process. Welding together of several lengths of centrifugally cast pipe, pipe manufacturers are able to produce in the stock lengths supplied by producers of sandcast pipe.

**Aluminum Foundries**—Development of an alloy rod which remedies the weld tenderness previously experienced on high strength aluminum alloys is an important step.

**Brass and Bronze Foundries**—Welding applications are restricted by the limited range of alloys with good welding properties. Recent development of the welding technique originally introduced abroad has extended the field of good welding alloys.

**Industrial Pipe**—Despite the fact that in many lines there has been decreased activity this year as compared with 1929, the proportion of welding used in industrial piping work has been increasing.

**Pipe Line Industry**—Careful consideration has been given to reduction of costs and of speeding up oxyacetylene welding in the large pipe line projects. A new field that offers tremendous possibility is that of gasoline lines.

**Steam Railroads**—Little data is available to show what gains have been made in processes for repairs of locomotives, cars and tracks, due largely to business depression and retrenchments of railroads.

**Structural Steel**—Compilation of structural welding statistics covering structures erected by fusion welding throughout the United States by the committee on building codes of the American Welding society is well under way. The object is to provide to the welding and construction industries accurate current information and progress reports in this branch of applied welding.

Additional subjects covered in the report were fluxes and their application, trade and industrial schools, engineering schools, training and testing of welders, procedure control, boiler welding, bronze and copper welding, chemical industry, electric railways, hard facing metals, heat treatment, job welding shops, marine, metal spraying, the oil industry, power plants, scrap yards and several others.

## See Wider Use of Acetylene Welding and Cutting

(*Concluded from Page* 48)

make the tank as rigid as when made of steel. This was pointed out as necessary because the stresses to which a truck tank is subjected on highways cannot be calculated accurately. Factors in the welding of aluminum gasoline tank trucks as outlined by the speaker include deep flanging, fitting of joints, composition of welding wire, and flux. A diminishing difference between the costs of aluminum and steel fabricating was seen, but the speaker said the manufacture of aluminum truck tanks still is in its infancy.

James W. Owens, director of engineering, Welding Engineering & Research Corp., New York, pointed out that the time of production in oxyacetylene processes in shipyards is of prime importance. He stated that it appears the oxyacetylene processes as at present utilized in shipyards successfully meet competition in most cases on one or all of the factors of cost, performance and time.

The success of oxyacetylene welded pipe lines, particularly as to joints, was considered by T. W. Greene, development engineer, and G. O. Carter, consulting engineer, Linde Air Products Co., New York. The paper stated that rarely, if ever, has a failure of a joint occurred in oil lines covering tens of thousands of miles and carrying pressures of 750 pounds and higher. It was declared that oxyacetylene welded joints in these lines have proved decidedly economical, but that need is shown for development of more satisfactory procedures and methods in the way of bending the pipe to meet the contour to provide for expansion-contraction, and of adopting practices that will assure extremely high welded quality to withstand strains in the circumferential joint in large diameter lines. This year, it was pointed out, has seen the establishment of a precedent in which lengths as long as 350 feet have been solid welded. It was stated the cost in welding even the large diameters today is less than that of welding the smaller sizes several years ago.

### Steel Widely Used

Eric Larson, superintendent of gas distribution, Long Island Lighting Co., Bay Shore, L. I., in discussing economies of welding in operation and maintenance of gas transmission systems, referred largely to steel pipe sections because of their wide general use. He stated welding has reached a state of perfection that is envious in the realm of joints.

Discussing production welding by the oxyacetylene process, Earl C. Booth, chief engineer, Noblitt-Sparks Industries Inc., Indianapolis, described tubing production running to some 80,000 feet daily. The production obtains about 9 feet of 22-gage tubing per minute up to 2 feet per minute on 14-gage tubing. In brazing a pump tube to a steel base, production of some 3000 pumps per machine daily has been obtained.

A resume of production welding was given by L. R. Gurley, editor of *Welding*, Pittsburgh. He said production welding is passing from the status of small-lot jobs into the field of routine, continuous production, the outstanding example being the automotive industry. Welded steel ships are a possibility in a few years, he stated, and pointed out that all-welded street cars and railroad tank cars are in service in France and Germany. He also mentioned that a full set of drawings has been prepared by the mechanical department of a large railroad for an all-welded 80,000-pound capacity steel box car, and an all-welded passenger coach, the superstructure of which will not contain a single rivet. The all-welded rivetless locomotive is almost a reality, he said.

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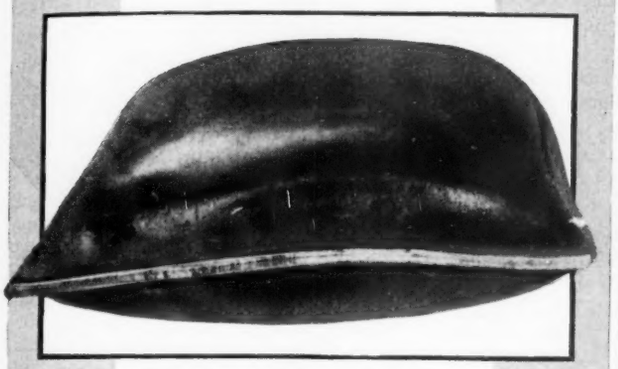
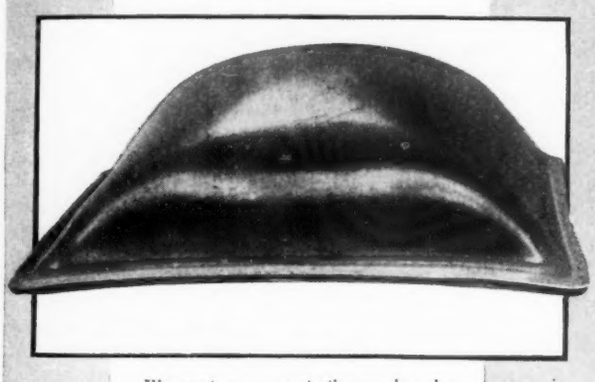
Cole Standard Grip-Nut Corp., New York, has changed its name to Improved Standard Nut Corp.

Everdur plates butt-welded by the oxy-acetylene process and bent cold through 180 degrees.



The edges of Everdur sheets were oxy-acetylene welded together and the "pocket" formed was inflated without failure in the weld.



Illustrating a test similar to that described above, except that the sheets were seam-welded on an automatic welder. There was no failure in the weld.

ANACONDA
from mine to consumer

*There is usually one best metal for every requirement.*

The American Brass Company, through its Technical Department, is prepared to help determine what this metal is and if the need can be met most advantageously with copper or an alloy of copper, to supply the metal in uniform, dependable quality.

# EVERDUR

## a high-strength non-ferrous metal which

## WELDS READILY

EVERDUR* Metal, a copper-silicon-manganese alloy containing 96% of copper and produced solely by The American Brass Company, combines the strength of steel and high resistance to corrosion with excellent welding properties.

With the present trend toward welded construction Everdur fills a definite manufacturing need because all types of welded joints commonly made in steel can be made in Everdur, with the same favorable comparison between the strength of the weld and that of the parent metal.

Everdur sheet is adapted to continuous seam or spot welding on automatic machines. Sheets from .010" to .125" thick can be seam welded at approximately the same speeds as those obtained when welding steel sheets of equal thickness. In addition, Everdur possesses excellent forming qualities.

Everdur is supplied by The American Brass Company in plates, sheets, rods, wire, tubes, rivets, blanks and ingots. Full information on physical and welding properties contained in Publications E-2, Fourth Edition, and E-4.

*Trade-Mark Reg. U. S. Pat. Off.

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# Research Group Plans Critical Reviews of World's Literature

A COMPREHENSIVE and critical review of the literature of the world on iron and its alloys and the promotion of fundamental research in this field are the two main divisions of work to be covered by the Alloys of Iron Research organized in 1929 by the Engineering Foundation, 29 West Thirty-ninth street, New York, in co-operation with the American Institute of Mining and Metallurgical Engineers, the American Iron and Steel institute and other technical societies with the support of a number of universities, government bureaus, research institutes and the industry at large.

**Research Work Is Scattered**

Fundamental research work of the world on iron and steel now is scattered throughout a large number of books and periodicals in many languages. It is clear that the first and most important duty of the Alloys of Iron Research is to review critically this mass of literature, assembled and correlate the information contained therein, and make it available in compact and usable form.

For this purpose a committee of ten leading metallurgists was appointed as follows:

Chairman and director, George B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., representing the American Institute of Mining and Metallurgical Engineers.

H. W. Gillett, director, Battelle Memorial institute, Columbus, O.

George K. Burgess, director, United States bureau of standards, Washington, representing the bureau of standards, Louis Jordan, alternate.

Scott Turner, director, United States bureau of mines, Washington, representing the bureau of mines. Charles H. Herty Jr., alternate.

R. E. Kennedy, technical secretary, American Foundrymen's association, Chicago, representing the American Foundrymen's association.

Bradley Stoughton, professor of metallurgy, Lehigh university, Bethlehem, Pa., representing the American Society for Steel Treating.

J. H. Critchett, vice president, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., representing the American Electrochemical society.

Jerome Strauss, chief research engineer, Vanadium Corp. of America, Bridgeville, Pa., representing the American Society for Testing Materials.

T. H. Wickenden, metallurgical engineer, International Nickel Co., New York, representing the Society of Automotive Engineers.

John A. Mathews, vice president, Crucible Steel Co. of America, New York, member at large.

Frank T. Sisco, editor, Alloys of Iron Research, New York, ex-officio member.

On Feb. 1, 1930, editorial work was started under the direction of Mr. Sisco, who for the past six years has been chief of the metallurgical laboratory, United States army air corps, Wright Field, Dayton, O. With the assistance of a small staff, the editorial office at New York will review approximately 2000 technical and scientific journals and a large number of books from 25 countries and written in ten languages. The work, which begins with 1890, will cover alloys of iron with 39 elements and compounds and the effect of these elements and compounds on plain carbon and alloy steels, cast iron, wrought iron, and other ferrous products.

**Group Chemical Elements**

For purposes of the critical review of the literature, the chemical elements involved were grouped as follows:

*Special*: Pure iron and carbon iron.

*Elements Present in All Iron Alloys*: Sulphur, phosphorus, manganese and silicon.

*Common Alloying Elements*: Nickel, chromium, vanadium, molybdenum, tungsten, aluminum, copper and cobalt.

*Alloying Elements Occasionally Used*: Zirconium, uranium, titanium, arsenic, cerium, boron and beryllium.

*Miscellaneous Heavy Elements*: Zinc, tin, lead, antimony, bismuth and the rare metal group.

*Alkaline Earth Elements*: Calcium, magnesium, sodium, potassium and lithium.

*Gases*: Oxygen, hydrogen, nitrogen, carbon monoxide, carbon dioxide and other gases.

*Nonmetallic Inclusion*: Oxides, sulphides and silicates.

Among the subjects covered are methods of manufacture, constitution, properties, thermal treatment, and uses. In the six months, ending Aug. 31, nearly 700 technical articles and papers have been reviewed and 2500 critical abstracts made of literature from the United States, Great Britain, Germany, and Sweden.

The work planned for the review of the literature will take about 5 years and will cost approximately $200,000 which has been subscribed by 65 participants. Included in these are most of technical societies and research institutes, two government bureaus and 50 industrial corporations. In addition to the co-operation being offered by the iron and steel industry of America the Alloys of Iron Research has been assured of the assistance of the National Physical Laboratory of Great Britain and Verein Deutscher Ingenieure of Germany, as well as workers and institutions in other countries.

**Results To Be Published**

The results of this critical review of the research work of the world on iron and steel will be published in book form; as monographs for the teacher and research worker, and as manuals for the practical man, the engineer, the steelmakers and the steel user. In these books attention will be directed to probable errors and to gaps in existing information. In addition, as the review of the literature progresses, there is being speedily built up a valuable body of reference material on which may be based later a service of great convenience to persons preparing programs for research, papers for technical societies, and for other purposes. From this file bibliographies covering any or nearly 800 classifications in ferrous metallurgy may be compiled readily. Publication of the first monograph will be made in 1931. Subsequent volumes will follow as rapidly as practicable until all of the alloy systems have been covered.

Special assignments to co-operating groups have been made as follows: "Iron-Silicon" to Bradley Stoughton, Lehigh university; "Iron-Molybdenum," "Iron-Tungsten," and "Iron-Carbon" to H. W. Gillett, Battelle Memorial institute; "Iron-Manganese" to Francis M. Walters Jr., Carnegie Institute of Technology; and "Pure Iron" to Louis Jordan, bureau of standards. Good progress is being made on all these assignments.

## Plans Regional Meeting

A regional meeting of the American Society for Testing Materials is to be held in Pittsburgh the week of March 16, 1931. The meeting will not constitute a business session of the society but, as in the case of the Detroit meeting last year, is designed to afford an opportunity for as many members as possible to meet with the members of the district and their guests. Several technical papers will be presented at this time. The regular spring group committee meetings will be held in conjunction with the regional meeting.

# Standardized Die-Casting Alloys Aid Industry

BY CHARLES PACK
Consulting Engineer, New York

## Part II

LOWER production cost is the prime motive that may induce a manufacturer to consider the installation of die-casting equipment. It follows, therefore, that before any manufacturer logically can determine the economy of producing his own die castings he at least should have a slight knowledge of die-casting costs. The cost of die castings may be divided into the following elements:

*Metal:* The daily market price of metal is a well known and definitely calculable factor. No "inside" prices exist and it can be assumed that the user of die castings can purchase metals at prevailing market prices and at a cost that is neither higher nor lower than that paid by the job shop. On the other hand, where a manufacturer uses pure aluminum or copper in sheet or wire form, he can utilize the scrap to good advantage in his die-casting department, without any sacrifice of quality.

*Casting Labor:* Possible economies in this item will depend upon the equipment purchased. Some job shops require two men on each die-casting machine. It is safe to assume that equipment can be purchased to operate with one man with no lower output with a possible economy of 50 per cent in direct casting labor. It may be well to consider that the average job-shop equipment must be standardized to meet the average requirements of many diversified jobs, whereas the proper equipment purchased to meet a definite requirement may be more efficient for that requirement.

### Involves Direct Charges

*Casting Burden:* This item includes direct burden charges that are attributable to the operation of the casting machine. They may properly include fuel, machine maintenance, die repair and maintenance, direct supervision, small supplies, and power.

For small units it is assumed that the machines can be operated without additions to the supervisory staff. This can be done with the proper choice of equipment. Such items as machine maintenance, die repair, fuel, etc., depend to a large extent on the casting equipment, however is available that can be operated at a minimum overhead cost when compared with the best job-shop practice.

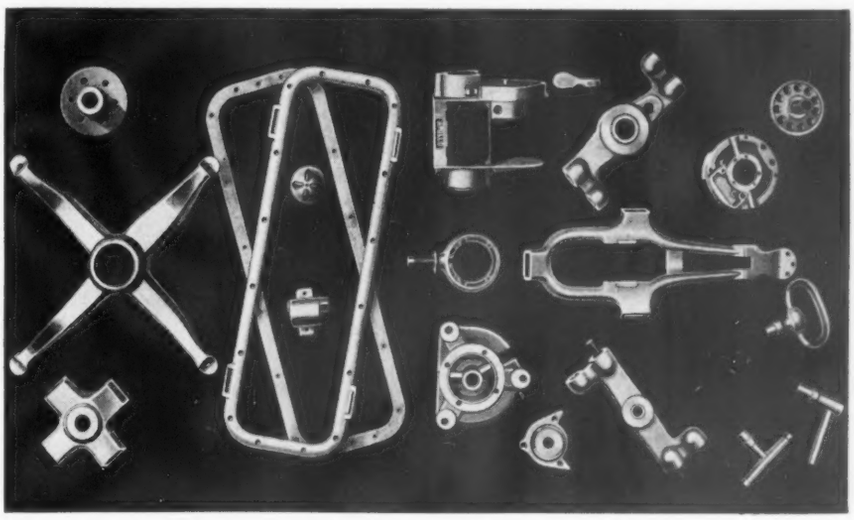
*Cleaning or Trimming Labor:* The cleaning or trimming operations are not truly a function of the die-casting process. The customary performance of these operations in the job die-casting plant is merely to facilitate packing and shipping. In many cases users of die castings will find it to their advantage to perform these operations in their own plant. The operations may consist of a press operation to remove the flash or simple machine operations to supplement any deficiency of the casting process. The job shop is somewhat at a disadvantage here, particularly if unfamiliar with the functions of the parts in service, as a result, the job shop frequently performs operations that are unnecessary or that are duplicated in the customers plant. The auxiliary die-casting department, being in a better position to understand the functions of the parts often can eliminate operations by combining them with subsequent machining or polishing operations. Savings in direct cleaning labor therefore may be expected in the auxiliary die-casting department over job-shop practice.

*Cleaning or Trimming Burden:* With small die-casting departments the cleaning division usually is combined with some other manufacturing department where other machine operations are performed. These so-called cleaning operations usually are performed on simple foot, power or drill presses. The addition of a few simple machines to an already existing manufacturing department will not materially increase the overhead of that department and substantial savings on this item of cost reasonably can be expected over the best job-shop practice.

*General Factory Burden:* In some job shops it is customary to split this item and apportion it over the casting and cleaning department burdens. This burden is treated as a separate item for the purpose of emphasizing its value as a factor of cost. It may comprise Packing; trucking and freight; loss on goods returned; inspection; factory clerical work; and, general factory expenses, such as employment, purchasing, receiving and factory maintenance.

### Necessitates a Saving

The auxiliary die-casting department must show a substantial saving over good job-shop practice on the items comprising the general factory burden, for the following reason. It is evident that the first three items, packing, trucking and freight, and loss on goods returned are eliminated from consideration in the auxiliary die-casting department although they must be considered as substantial factors of cost by the job shop. Inspection also can be eliminated from consideration in the auxiliary die-casting department's cost, since invariably, the job die-casting plant's inspection must be supplemented in the users plant by what may be considered as a duplicate inspection. This duplication of inspection is eliminated with the installation of an auxiliary die-casting department. It also is evident from a consideration of the remaining items that the addition of a die-cast-



*Miscellaneous automobile parts made by die-casting machines*

ing department to any well-organized plant would not materially increase any of these cost factors. The manufacturer, therefore, producing his own die castings has a distinct advantage in general factory costs over the best job-shop practice.

*General, Administrative and Selling Costs.* Some of the most important cost factors in this item are officers' salaries, selling costs, advertising, office expenditures and development costs. Since these items usually are calculated on the original product they are not increased when die-casting equipment is installed and they may be eliminated as a factor of cost in the auxiliary die-casting department although they must be taken into consideration by the job shop in figuring costs. The importance of this item as a factor of cost and the possible saving incident to its elimination may be understood when it is stated that with the best job-shop practice, the general administrative, and selling cost must be estimated at a minimum of 20 per cent of the total manufacturing costs, exclusive of metal.

*Profit.* This item is eliminated from consideration as a cost factor with the auxiliary die-casting department.

Having considered the elements of direct costs in the installation of die-casting equipment, it may be well to consider some other factors that may not be apparent in direct cost comparisons but do, indirectly, affect ultimate costs as well as quality of product.

*Inserts.* The value of the judicial use of inserts has long been recognized in good die-casting practice. One of the objections to the use of inserts is the attendant cost, confusion and delay incident to the shipment of inserts to the job shop.

*Metal.* The physical properties of many of the best die-casting alloys are dependent upon the purity of the alloy and its freedom from contamination with foreign metallic elements. Many job shops, catering to a diversity of trade are forced to use a variety of alloys, each harmful to the other.

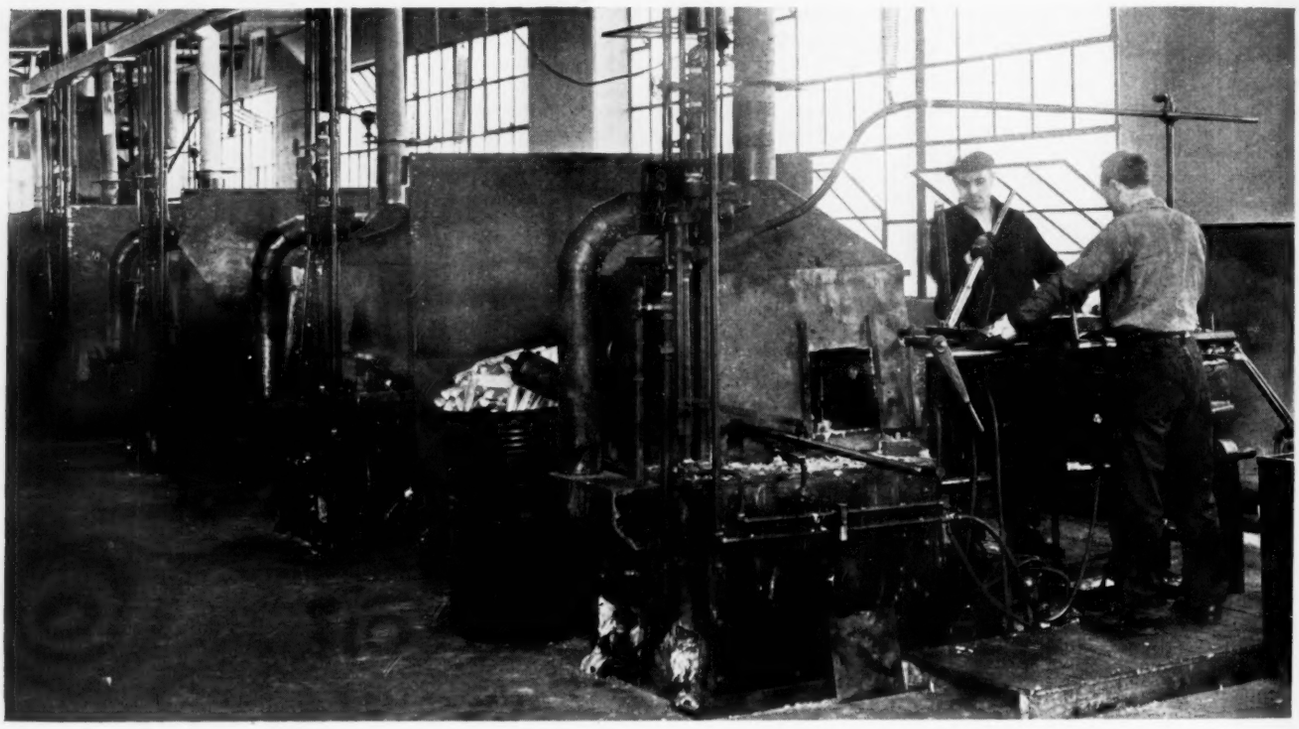
Under such conditions, contamination often is unavoidable. The only safeguard for the quality of an alloy and the resultant product is the absolute absence of objectionable impurities from the vicinity of the die-casting plant. This condition maintains in the auxiliary die-casting department, limited to a specific product.

*Inventory.* The auxiliary die-casting department has the advantage of being able to give better service. Shipping delays are eliminated and large, frozen inventories of finished castings are reduced to small liquid inventories of readily salable raw metals.

*Errors.* It is safe to assume that errors will occur both in the job as well as the auxiliary die-casting department. In the former case, such errors usually will cause confusion, because of the inventory on hand and in transit. Much time usually is lost in getting the die corrected, into production again, and shipment made. The auxiliary die-casting plant, working close to the other production departments, is in a better position to discover errors promptly and to rectify them without confusion or loss of time in the production line-up.

It is evident, from the foregoing, that there is much to be said in favor of manufacturers making their own die castings. The arguments in favor of this procedure are similar to those that have been used and proved right, for the installation of punch presses and screw machines. While the foregoing may be construed as favoring the installation of die-casting equipment by manufacturers for their own use, it is presented mainly for the purpose of a practical outline of the facts as they exist. The job shop cannot alter the basic and fundamental truths by merely ignoring them. It is hoped that a careful consideration of the foregoing will result in two beneficial and highly desirable results, viz :—

1. Awaken a realization on the part of the jobbing die-casting industry to the necessity of greater co-operation in the solution of their problems and for the purpose of placing the entire industry on a higher plane of efficiency and quality. The foregoing must convince any clear-minded executive of a job die-casting plant of the absurdity and futility of attempting to build up their industry on any other basis but that of higher quality and lower costs. In addition to competition with each other, the job shop must recognize the nature of the competition of the plant producing its own die castings. In loyalty to its customers, the job shop must see that its production costs compare favorably with those of its customer's competi-



*Die-casting room showing a complete die-casting unit. Fumes from all furnaces are led into a common exhaust system*

tors who make their own die castings. On this basis only, will the job die-casting shop as well as the entire industry prosper. On any other basis, the entire die-casting industry must suffer, not at hands of the auxiliary die-casting department, but at the hands of the other competitive metal-working arts.

**Subject Should Be Understood**

2. Awaken a realization on the part of those users contemplating the manufacture of their own die castings, that the subject is fraught with grave danger unless thoroughly understood. It is hoped that the foregoing will tend to make users of die castings stop, think and investigate before plunging into an investment for die-casting equipment. The fact that one is a large user of die castings does not always mean that it is economical or advantageous for that user to make his own die castings. On the other hand, neither does it follow that even a limited die-casting production cannot be more economically and practically produced within ones own plant rather than in an outside job shop. The problem must be approached with the same caution and desire to learn the facts, that should characterize any new business venture.

Advice and data coming from any enthusiastic proponent of any particular machine must be weighed carefully, the sellers enthusiasm discounted and all the elements of cost taken into consideration, without prejudice. The purchase of die-casting equipment without definite proof of the economy and the applicability of that equipment to the product under consideration, is not good business practice. In every instance, it is possible to predetermine these facts prior to the purchase and installation of equipment and every good business executive should insist on this proceedure. Above all, it may be stated as a general rule, that it is poor practice to enter into any new undertaking unless prepared with a thorough understanding of the basic principles behind that undertaking.

## Automotive Group Publishes Production Standards

Revised production standards for cut and ground threads, plug and ring gages, and Woodruff key-slot cutters and gages have been published by the Society of Automotive Engineers, New York, and now are available in pamphlet form. These standards supersede specifications in these lines adopted before January, 1930, at which time revisions were adopted.

In the gage standards, a dimension for the bottom diameter of the groove in the plug-handles was added, optional handles were cancelled and the range of optional sizes for cylindrical plugs was increased. The back-clearance of key-slot cutters and gages has been increased to give greater chip space and several dimensions have been revised upward. The standards for taps were revised to conform to specifications developed under a subcommittee of the National Screw Thread commission. These specifications were very similar to standards adopted by the Society of Automotive Engineers in 1927.

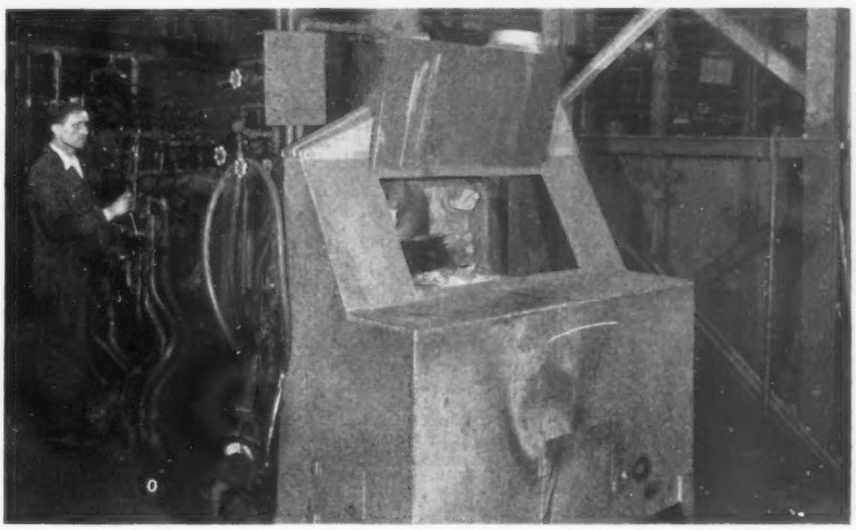
## Booklet Describes Tests of Vertical Sand Cast Pipe

Physical tests of six different types of cast iron pipe made by the University of Michigan for the water board of the City of Detroit and the results of these tests are described in 42-page booklet published by the department of engineering research of the university. The bulletin, entitled "A Comparison of the Physical Properties of Various Kinds of Cast Iron Pipe," was written by F. N. Menefee and A. E. White of the department. The tests were so conducted that the results are comparable with a similar investigation made for the city in 1927 and published by the American Society for Testing Materials in 1928.

From the physical tests which have been made there does not appear to be much difference between French and American sand cast pipe. However, from the general physical data which have been procured, the writers question the wisdom of recommending any vertical sand cast pipe, be it French or American. The booklet which contains 15 charts and 25 tables can be obtained from the University of Michigan, Ann Arbor, Mich., through J. Raleigh Nelson, chairman of the committee on publications, for 50 cents.

## Concrete-Making Properties of Slag Reviewed

Complete utilization of blast-furnace slag in commercial projects has been brought closer to realization by extensive research into the concrete-making properties of the material. The details of the investigation are described in booklet, "Relation Between the Abrasion Loss of Blast-Furnace Slag and Its Concrete-Making Properties," published by the National Slag association, 937 Leader building, Cleveland. The bulletin is a reprint of the 1930 report of Committee C-9 on concrete and concrete aggregates of the American Society for Testing Materials. The investigation studied the results of all existing research work bearing on this subject and studied slags from a sufficient number of individual sources having a sufficient range in weight and abrasion loss to be entirely representative in the product as commercially produced.

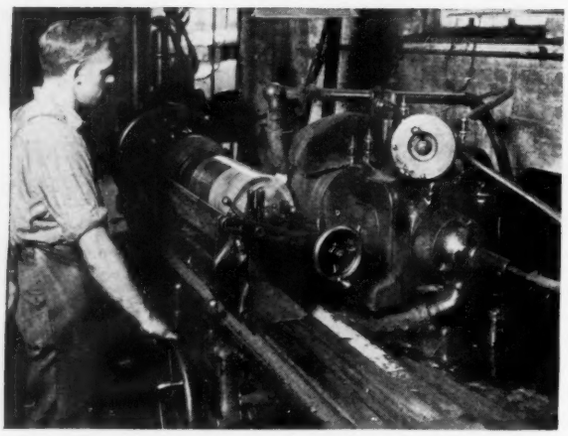


*Die-casting machine with gas-fired pot used for making automobile parts*

## Testing Group Adopts Materials Specifications

Specifications and methods of testing adopted as standard by the American Society for Testing Materials during 1930 include a large number of standards which directly affect the building construction industry. Included in the list are new standards for billet-steel concrete reinforcement bars, welded and seamless steel pipe, refined wrought-iron bars and welded wrought-iron pipe. Specifications for open-hearth iron plates of flange quality are now being considered as one of the tentative standards which have been proposed.

# Maintains Accuracy Increasing



*Courtesy of Carborundum Company, Niagara Falls, N. Y.*

**OPERATION:** GRINDING STEEL ROLL, 9 IN. DIAMETER, 18 IN. LONG.
**MACHINE:** LANDIS ROLL GRINDER, 12 IN. X 72 IN.
**SCLEROSCOPE:** 94 TO 101.
**WHEEL ROUGHING:** 36-9-C9R.
**FINISHING:** 120-6-C6Y.
**POLISHING:** 400-10-C10Y. 18 IN. X 1½ IN. X 8 IN.
**METAL REMOVED:** ROUGHING .0015 IN. PER PASS. FINISHING .0005 IN. PER PASS. TOTAL AMOUNT OF METAL REMOVED, .005 IN.
**WHEEL SPEED:** 1700 R.P.M.
**WORK SPEED:** 40 R.P.M.
**LUBRICANT:** 1 PART SUNOCO TO 30 PARTS WATER.

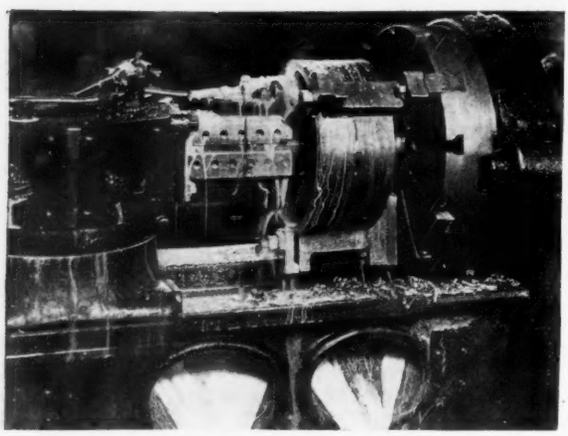
Machine shop executives, alert for means to shorten machining time, find the real solution in a better cutting fluid—Sunoco Emulsifying Cutting Oil.

A significant tribute to Sunoco is its increasing use by machine tool builders, steel plants, gear manufacturers and the automotive industry. It has been chosen after exhaustive tests of every factor that contributes to machine performance.

Sunoco reduces time lost in frequent tool re-sharpenings; it decreases rejections, and as a consequence the production of accurate work increases even though speeds and feeds remain the same.

It is an easily substantiated fact that many users have increased production by higher spindle speeds and feeds—with the same precision and quality of finish as at lower speeds.

Careful choice by numerous large users proves that there is no guess work about Sunoco's superior lubricating, cooling and rust-preventing qualities.



*Courtesy of Bates-Wohlert Company, Lansing, Michigan*

**OPERATION:** BORING 15 IN. STARTER GEAR BLANKS.
**MACHINE:** LIBBY LATHE.
**MATERIAL:** .50 CARBON STEEL.
**FEED:** ⅛ IN.
**SPEED:** 130 S.F.P.M.
**LUBRICANT:** 1 PART SUNOCO TO 20 PARTS WATER.

SUN OIL COMPANY, Philadelphia, U.S.A.

SUN
EMULSIFYING
*Made by* SUN OIL CO. *producers*

Akron, Albany, Allentown, Atlantic City, Baltimore, Battle Creek, Beaulumbus, Dallas, Dayton, Detroit, Flint, Grand Rapids, Harrisburg, Jackson, Philadelphia, Pittsburgh, Providence, Quebec, Quincy, Reading, Rochester,

# and Finish — *while* Production

With Sunoco, deeper and faster cuts are possible, production increased, work is kept cooler, tool life lengthened, machines and finished parts are protected from rust and corrosion, systems require cleaning out and replenishing only about half as often, and its net cost is less.

It is perfect in its emulsion; will not separate. It is hygienic, containing no animal or vegetable fats to become rancid after prolonged use. Cuts on workmen's hands will never become infected.

Tests in any manufacturer's plant will gladly be made. Our engineers are at your service. Consult them on all matters pertaining to more efficient work at lower costs.

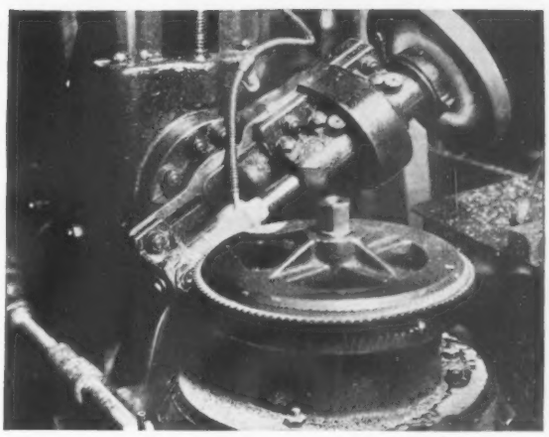
Write any of our many branches, or to our home office.

*The Sun Oil Company produces a type of cutting oil to meet every metal-cutting requirement*

SUN OIL COMPANY, Ltd., Montreal, Canada.

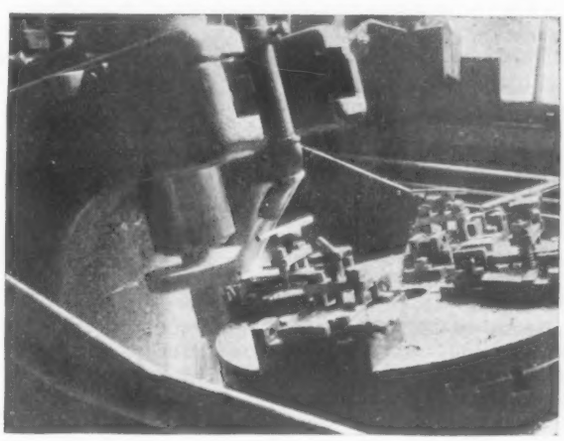
OCO
CUTTING OIL
*of* BLUE SUNOCO MOTOR FUEL

mont, Binghamton, Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Co- (Mich.), Jacksonville, Miami, Montreal, Newark, New York, Ottawa, Scranton, Syracuse, Tampa, Toledo, Toronto, Trenton, Tulsa, Wilmington.



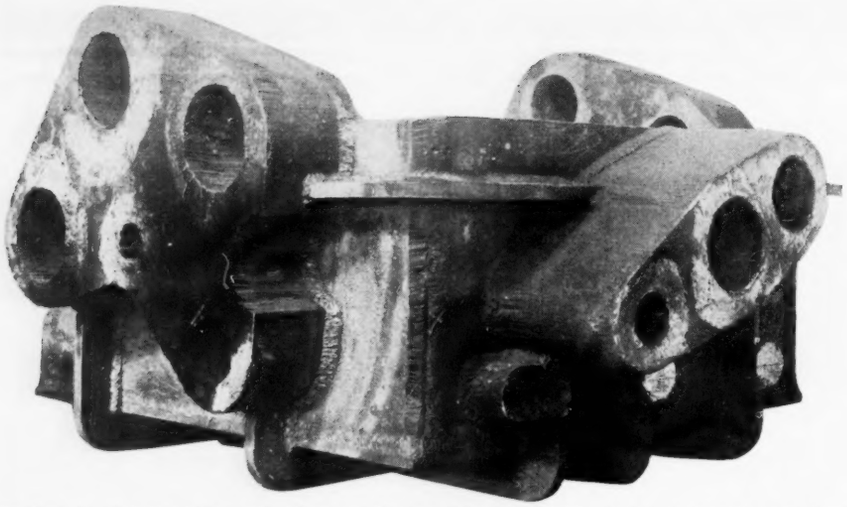
*Courtesy of Bates-Wohlert Company, Lansing, Michigan*

OPERATION: CHAMFERING STARTING GEAR TEETH.
MACHINE: FARWELL HOBBING MACHINE.
MATERIAL: .50 CARBON STEEL.
NUMBER OF TEETH: 110.
CUTTER SPEED: 150 R.P.M.
LUBRICANT: 1 PART SU OCO TO 15 PARTS WATER.



*Courtesy of Columbia Axle Company, Cleveland, Ohio*

OPERATION: MILLING BEARING CAP.
MACHINE: OESTERLEIN HEAVY DUTY MILLER.
MATERIAL: MALLEABLE IRON.
SPINDLE SPEED: 28 R.P.M.
CUTTER SIZE: 10 IN. DIAMETER 1½ IN. FACE 2 IN. BORE.
CUTTER SPEED 73 S.F.P.M.
STOCK REMOVED: .0625 IN.
CUTTING LUBRICANT: 1 PART SUNOCO TO 16 PARTS WATER.



*Owing to the complicated shape and one-side welds on this 1180-pound drilling jig the piece was stress relieved in a furnace*

# Stress Relieving Improves Welded Machine Parts

BY G. D. SPACKMAN

President, Lukenweld Inc., Coatesville, Pa.

COMMERCIAL production of welded steel machinery parts involves many new problems Not the least of these is the one which arises from residual strains left in the welded structure by the welding operation. Since the problem occurs in all welded structures, the principles followed in the manufacture of machinery parts by Lukenweld Inc., Coatesville, Pa., may be of interest to those who have to deal with welded steel construction. This discussion refers primarily to electric arc welding since that is the process used in most steel fabrication where the metal is more than ¼-inch thick.

### Weld Is Stressed

It seems likely that residual stress is present to some degree in every electric weld immediately after its completion. How objectionable it is depends on the amount present and the service to which the welded structure is to be subjected. However, there are certain well defined cases in which residual stress is so objectionable that it is necessary to stress relieve the whole structure in a furnace. These cases may be described briefly as:

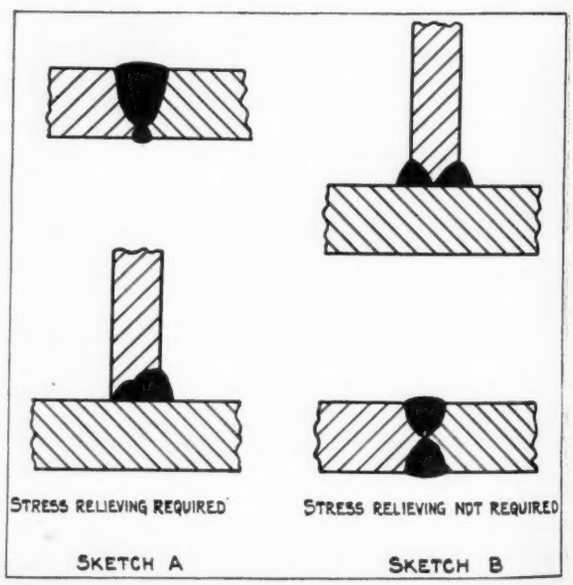
1. Residual stress which results in unit loads possibly twice as great as the loads for whch the stressed member was designed.
2. Residual stress which results in warping beyond permissible limits.
3. Residual stress which results in warping of the piece beyond permissible limits during machining operations.

A welded steel structure might be designed for a normal working load of 15,000 pounds per square inch. If a residual stress of 25,000 pounds per square inch is present before the service load is applied, it is evident that the elastic limit of any ordinary plate or structural steel will be exceeded. With a weld stronger than the plate, several undesirable events might happen. Premature failure by fatigue might occur or the structure might "give," thus destroying the original dimensions. If the residual stress were in a local area there might not be an appreciable reduction of the factor of safety with reference to final failure, due to the fact that exceeding the elastic limit locally would result in a redistribution of the loads. The guiding principle in this case, therefore, would be to stress relieve the structure if it is to be subjected to fatigue loading or if an appreciable amount of "give" in the members will not be permissible under service conditions.

### Warpage Increases Cost

Warping of a welded structure for mechanical uses where it must be machined to size is a source of economic loss. The case is similar to that of castings where excess metal is provided to make the job "clean up" in the machine. Stress relieving is necessary to save supplying a great deal more metal than is required. But in this case it must be accomplished by sequence of welding and peening of the metal. It is not at all certain that a warped piece will straighten out in the furnace. The most that can be done is to hold the amount of warping to a minimum during the welding operation.

Machining a "green" casting and machining a welded steel structure with appreciable residual stress present much the same kind of problem. Not many gray iron castings are seasoned with the present set of conditions relative to competitive prices. In many cases, the economies effected by use of welded steel in place of gray iron will permit stress relieving the steel and still have the job cost less than a "green" gray iron casting. But this is not al-




*TWO types of welded joints, illustrating conditions which require that the part be stress relieved, and those which do not require this treatment*

ways true. Welded steel construction must be stress relieved if it is to hold its dimensions during machining operations the same as an annealed steel casting.

In general, appreciable residual stress is left in a welded joint when there is more weld on one side of the center than on the other, as shown in sketch A of the accompanying diagram. Where the weld may be made equal on both sides, residual stress may be held to low values by proper welding procedure, illustrated in sketch B of the diagram. Another of the accompanying illustrations shows a rather complicated mechanical part which was stress relieved in a furnace. In this case, the shape is complicated and it was impossible to put an equal amount of weld metal on both sides of every joint. The third illustration shows a simple piece which was welded and machined without stress relieving.

## Rolls Steel at Door of Automobile Industry

(*Concluded from Page* 46)

will be complete with the necessary heating furnaces, roller tables, cooling beds and auxiliary machinery. The stands will be driven by a 300, two 400, two 500, two 600, two 700, a 1000 and a 1500-horsepower motor. These motors with their necessary generators, transformers and switching equipment will be housed in a brick building inside the main mill building.

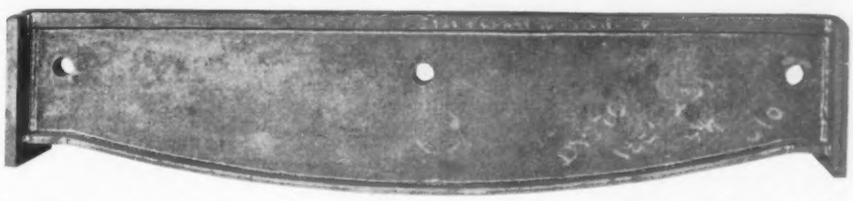
In general, the plant is complete with the necessary tracks; scales; sewer system; water, steam, oil and air lines; and, offices conveniently located to house the operating personnel. At the foot of Tecumseh road and conveniently located to the mills is a 100 x 75-foot, 2-story, brick office for housing the engineering and operating departments.

## Effect of Phosphorus on Castings Outlined

Phosphorus may be present in gray iron castings in quantities up to 1 per cent without detrimental effects according to Y. A. Dyer, metallurgist, Birmingham, Ala., who presented a paper on "Phosphorus in Cast Iron" at the fall regional conference of the Ohio Foundries association at Columbus, O., Nov. 14. Mr. Dyer qualified this statement to some extent by adding that his experiments indicated this condition to be true providing the silicon and carbon are held as low as possible as governed by machining requirements.

Another paper presented at the meeting was "Industrial Accounting by Production and Operating Factors," by William A. Ullrich, cost accountant and engineer, Dayton, O., in which a system of accounting developed for use at the Dayton Steel Foundry Co., Dayton, O., was explained. Frank W. Jackson, vice president, American Appraisal Co., Chicago, spoke on "Property Dollars—The Necessity for Their Control in Determining Production Costs and Profits and Loss." Mr. Jackson pointed out that obsolescence was the most important factor in depreciation. A motion picture showing the manufacture of iron in the blast furnace accompanied a short paper on "Raw Materials in the Foundry," by Ralph H. Sweetser, assistant to vice chairman, American Rolling Mill Co., Columbus, O.

Officers elected at the meeting were: President, A. H. Kramer, vice president, Advance Foundry Co., Dayton, O.; vice president, J. H. Bruce, Bowler Foundry Co., Cleveland; and treasurer Charles Seelbach, Forest City-Walworth Run Foundries, Cleveland.



*Simple welded structure with welding equally distributed on both sides of the joint. Stress relieving was unnecessary*

## Many Plan To Exhibit in Western Metal Show

With more than 60 companies already having reserved space, the National Western Metal and Machinery Exposition to be held at Civic Auditorium, San Francisco, Sept. 16-22, 1931, promises to equal or exceed in size the show held in 1929. Many companies in the metal fields in the eastern part of the country will send delegations to California for the show. The technical program is incomplete but it will include contributions from nationally known technicians of the metal industry.

## Steel Use in Automotive Industry Shown

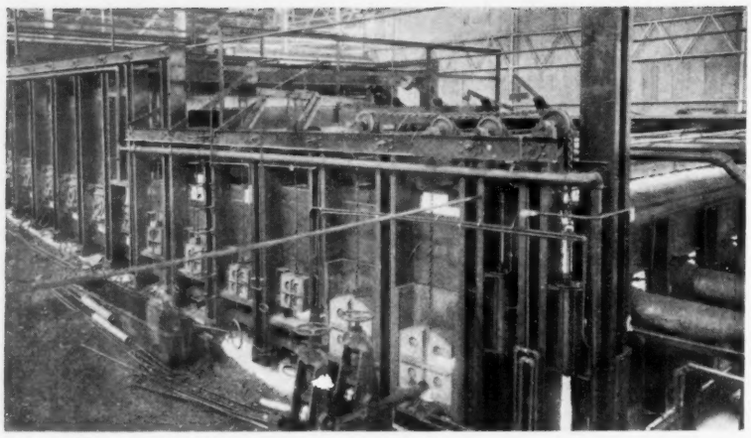
Steel in a wide variety of forms found a prominent place in the joint trade show of the National Standard Parts association and Motor and Equipment association at Public Auditorium, Cleveland, Nov. 13-19. The principal use of steel in the exhibits was in the wide range of tools shown. Every type of hand tool and numerous air and motor-operated devices were on display. This show was mostly of interest to jobbers, yet many types of valves, piston rings, ball bearings finishing machinery and other production units were offered for the replacement trade.

The use of alloy steels was confined principally to a few displays of chrome-vanadium tools and to rust-resisting steel used as trim on accessories. One company exhibited a automobile trunk fabricated from one piece of steel. The sides and base of the trunk are pressed from deep-drawing sheet and the lid is attached later. Another exhibit featured a truck axle and housing forged from a single piece of steel. This set-up, which obviates unneccessary connections between pieces, required care in its manufacture in order to eliminate poor grain structure and to insure the absence of destructive interior stresses. The axles are built from steel with a number of different chemical compositions, heat treated and prepared for the individual job.

## Chicago Area To Hear Steel Treating Lectures

Prof. John F. Keller, special lecturer of the American Society for Steel Treating has started his series of lectures on "Steel and Its Treatment" to groups in Milwaukee, Chicago, Minneapolis, Rockford, Ill., and Harvey, Ill. These lectures, continuing one night a week for six weeks, are prepared to explain the basic principles of the effect of working and heat treatment on the physical properties of iron and steel. Professor Keller is steel specialist, engineering experiment station, Purdue university, West Lafayette, Ind., but for the last four years has been engaged for brief periods by the Steel Treating Society to present his course before groups organized by the society. His present affiliation is for the duration of a year.

A series of lectures was recently completed in cities of the Ohio district, including Mansfield, Canton, Erie, Lorain and Cleveland, with a total enrollment of 853. A group in Lorain, O., was made up of 431 men from the National Tube Co. and constituted the largest single group Professor Keller ever lectured to.



94-Foot Billet Heating Furnace with Detrick Roof

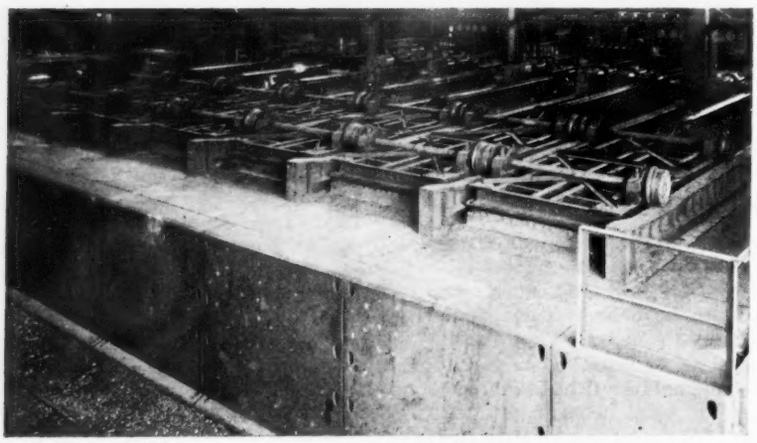
## A Typical Detrick Installation - - -

a ninety-four foot billet heating furnace in the Gambrinus plant of the Timken Company. The suspended arch principle employed by Detrick means flexibility of design, allowing for expansion and contraction of the refractory material without damage, assurance that the roof will not collapse, and makes it easy to replace burned out patches without disturbing other sections of the roof.

## SUSPENDED ARCHES FOR HEATING FURNACES

# DETRICK

## SOAKING PIT COVERS



Detrick Covers on Chapman-Stein One-Way Fired Soaking Pits with Tile Recuperator.

On the left are soaking pit covers embodying the Detrick Suspended principle which consists of center-grooved tile suspended by cast iron bars from structural steel beams spanning the pit and framed into outside structural members of the moving frame.

The use of suspended tile eliminates the possibility of cover failure due to constant jars and shocks; provides a better seal on the pit walls and makes it possible to repair the cover in small sections without disturbing other sections of the cover.

Ask Detrick Engineers — furnace experts — to study *your* furnace conditions and report what Detrick construction will do for you. No obligation!

*Detrick construction has reduced maintenance cost in many prominent plants* (names on request).

## M. H. Detrick Co.

**140 S. Dearborn St., Chicago, Ill.**

Our sixty-four page catalog gives illustrations and full details concerning Detrick Arches, Walls and Roofs. Write to our nearest office for a copy.

**New York: 50 Church St. Philadelphia: 1421 Chestnut St. Pittsburgh: Empire Bldg. Detroit: Penobscot Bldg. San Francisco: Russ Bldg.**

## Testing Society Will Hold 1931 Meeting in Chicago

The American Society for Testing Materials will hold its 1931 annual meeting at the Stevens hotel, Chicago, June 22-26. This meeting, the second to be held outside of Atlantic City, will differ somewhat from past meetings in that it is being held in a large city which is the center of a great engineering and industrial community and the program will be developed with this fact in mind. In 1932, the society will meet again in Atlantic City, N. J., at Chalfonte-Haddon Hall.

A joint session is being planned with the Western Society of Engineers for the 1931 meeting. The program for this session would be developed so as to be of general interest and according to present plant it would be devoted to a discussion of the significance of specifications in major industries of the district. It also is planned to hold a symposium on "Effect of Temperature on the Properties of Metals" to which two sessions of the meeting would be devoted, to be held under the joint auspices of the society and the American Society of Mechanical Engineers. The subject of "Engineering Properties of Castings" is being developed in Co-operation with the American Foundrymen's association.

## Book Gives Data on Design and Use of Cranes

Whiting Corp., Harvey, Ill., recently has published a book entitled "Crane Engineering," the data for which was compiled by M. F. Beetham, one of the company's crane engineers. The compilation is in the form of a handbook of crane data and contains such information as how to select a crane, duty classification of all types of cranes, standard clearances for electric overhead traveling cranes, average range of speeds for all classes of duty, duty cycle analysis, etc.

The book also explains details of construction and operation of various type cranes including the bucket-handling, gantry, traveling, jib, pillar and bucket types. Further information includes lifting attachments, electrical equipment for overhead traveling cranes, erection, lubrication, specifications and safety features. The book is well illustrated with both details and typical installations and contains many tables giving specifications for various type cranes.

Ruth Dredger Co., Huntington Park, Calif., Los Angeles district, has completed an irrigation dredger with capacity of 500 yards of dirt per minute, for use on the Indian reservation at Coolidge, Ariz. It weighs 30 tons.

## Steel Propeller Is Fabricated by Arc Welding

COMBINING the benefits of arc welding, forging and machining in order to combat the high costs usually associated with the building of a single article, the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., recently completed the economic manufacture of a propeller for a large blower. The hub of this propeller is forged and machined from a solid piece of steel. The unit was assembled by arc welding the two taper, turned and warped plate steel blades into slots cut in the hub. The entire blower housing is also fabricated by arc welding.

The propeller, shown in the accompanying illustration, is 42 inches in diameter and is constructed for a blower of 100,000 cubic feet per minute capacity at 16½-inch static pressure driven by a 300 horsepower 3520 revolution per minute motor, three of which were ordered to operate in parallel for Hell Gate station.

## Publish Welding Code

The American Welding Society recently has published the 1930 edition of Code 1 Part A, the "Code for Fusion Welding and Gas Cutting in Building Construction." This edition includes an appendix containing a digest of references to publications of the American Bureau of Welding. In the 1928 edition of the code these publications were referred to only. Additional explanatory matter is provided where needed to make the bureau's publications more applicable to code purposes. The code in other respects is essentially unaltered except for minor changes in the wording of three paragraphs. Copies of the code are available at the office of the American Welding society, 33 West Thirty-ninth street, New York.

## Low-Voltage Current Is Fatal Accident Cause

More than half of the fatal accidents of the past two years caused from contact with low-voltage electric current, ranging from 110 to 750 volts, have been of an industrial nature, according to the National Safety council. The investigation revealed that of the 107 cases studied, 58 were purely industrial, while 44, or more than two-fifths of all the cases, were caused by the ordinary 110-volt alternating-current voltage. Home fatalities rank second to industry with 31 deaths and there are 9 mine fatalities and 4 railroad accidents which ended fatally. Thirteen of the deaths were due to handling exposed wires; 11 fatalities resulting from working or handling live parts and there were 6 flagrant violations of the National Electrical code. That the exposed switch is becoming a thing of the past is shown by the fact that only one fatality was recorded by this hazard.

# Convention Calendar

**Nov. 19-20—National Founders association.** Thirty-fourth annual meeting at Hotel Astor, New York. J. M. Taylor, 29 South LaSalle street, Chicago, is secretary.

**Nov. 20-21—American Institute of Mining and Metallurgical Engineers.** Open hearth committee meeting at Cleveland hotel, Cleveland. L. F. Reinartz, American Rolling Mill Co., Middletown, O., is chairman.

**Nov. 25—Chicago Blast Furnace and Coke association.** Annual fall meet- at Chicago. W. C. McKee, By-Products Coke Corp., 108th street and Calumet river, Chicago, is secretary.

**Dec. 1-6—American Society of Mechanical Engineers.** Fifty-first annual meeting at Engineering Societies building, New York. Calvin W. Rice, 29 West Thirty-ninth national exposition of power and

**Dec. 1-6—National Power show.** Ninth national exposition of power and mechanical engineering in Grand Central Palace, New York. Charles F. Roth, Grand Central Palace, New York, is manager.

**Dec. 10—Malleable Iron Research institute.** Annual meeting at Cleveland hotel, Cleveland. Robert E. Belt, 2013 Union Trust building, Cleveland, is secretary.

**Dec. 11—American Standards association.** Annual meeting at Engineering Societies building, New York. P. G. Agnew, 29 West Thirty-ninth street, New York, is secretary.

**Dec. 12—Grinding Wheel Manufacturers Association of the United States and Canada.** Annual meeting at Lafayette hotel, Buffalo, N. Y. Frank R. Henry, Simonds Worden White Co., Dayton, O., is secretary.

# Scanning the Technology of Steel

A Digest of Important Developments in Scientific Research, Engineering Progress and Operating Procedure Pertaining to the Production, Processing, Application and Performance of Steel

## USES:

### Sawmaking Fundamentals

*An interview with S. H. Disston, presented in American Machinist, Nov. 6, p. 730, 3 pp., 3 illusts.*

Correct steel, the proper treatment of these steels in the process of manufacture, and skillful workmanship are three phases involved in the making of saws for long service. The average quality of steel from the electric furnace is much higher than the average from the crucible furnace. Ingredients used in crucible practice are used in electric furnaces, thus all the advantages of crucible practice are retained. Hacksaw blades must be rolled smooth and true to gage. The teeth must be milled and the blades tempered uniformly on the cutting teeth and at different sections of the same blade.

—STEEL 11-20-30

## FABRICATION:

### Bronze Welding

*Correct practice for this application and its advantages in joining the more common metals, discussed in Oxy-Acetylene Tips, November 1930, p. 71, 6½ pp., 12 illusts.*

Cast iron should be prepared for bronze welding by chipping or grinding the surfaces to be joined to form a vee, cleaning them thoroughly after grinding. After the parts are aligned, the blowpipe flame should be played on the metal surrounding the break so that it is heated gradually to the point where it begins to glow. A casting hot enough to char a crumpled newspaper or sawdust is ready to weld with bronze. However, the surface being welded must be brought by the blowpipe to the proper temperature. The use of a high-strength bronze welding rod and suitable flux is essential to successful bronze welding. Proper tinning is an important factor. After the tinning layer has been obtained, more rod is added rapidly and the vee built up. Fluxing should be continued throughout the operation so that any impurities or bubbles of gas in the weld metal will be removed. A sheet of asbestos paper often is used to cover the finished job and protect it from drafts during the cooling. No stress should be placed on a bronze-welded joint until it has cooled completely. The technique for bronze welding, malleable and wrought iron and steel is similar to that for making joints in cast iron.

—STEEL 11-20-30

### Chromium Plating

*Difficulties associated with the electrodeposition of chromium, discussed by J. W. Cuthbertson, in the Metal Industry, Oct. 31, 1930, p. 421, 2½ pp.*

Work should be prepared carefully. After the usual grinding and polishing the article should be freed from grease in an alkaline electrolytic cleaning vat containing caustic soda, dipped in a 10 per cent solution of sulphuric acid, rinsed, scrubbed with pumice if the article is of steel, and again rinsed. Small articles should be plated in a vat of medium size. The best deposits are obtained from a solution of chromic acid and chromium sulphate in water. The temperature usually is kept about 104 degrees Fahr. The current density should be adjusted with the same accuracy as the temperature. Good results have been obtained when the current density ranges between 65 and 85 amperes per square foot. Whenever chromic acid is added to the vat it is essential to use only pure material free from sulphates. The author presents a method for plating automobile bumpers, zinc-base die castings and door handles.

—STEEL 11-20-30

## PRODUCTION:

### Drop Forging Progress

*Close control requirements involved in the production of quality drop forgings, discussed by A. M. Steever, in Metal Progress, November, 1930. p. 45, 5 pp., 4 illusts.*

Heating the steel prior to forging is a most important step. One of the drop forger's greatest needs is to eliminate overheated and burnt steel. Steel of forging quality should be purchased. Proper quality of bars and billets excludes defectives from internal unsoundness, seams and surface defects. Other classes of defects include coldshuts, laps, dies mismatched or not properly filled, and scale pits and burnt forgings. Causes of these defects are explained by the author. Grain flow in the finished forging is of vital importance. In steel, the working stresses should fall parallel with the direction of flow of the material in the finished shape. Flow lines in drop forgings possess distinctive directions depending upon the way the metal is forced into its final form. It is essential that stresses only should be allowed to fall on parts wherein the flow lines are placed in such direction as will offer the most resistance to fracture. Elimination of cross grain requires study.

—STEEL 11-20-30

## MISCELLANEOUS:

### Lubricating Systems

*Factors which govern the use of a lubricant and the method of application, discussed by L. A. Ballard, in Machine Design, October 1930, p. 39, 2½ pp., 3 illusts.*

All greases are not suited for industrial lubrication. Antifriction bearing makers recommend a semisolid lubricant, or a solidified oil of light consistency containing only high-grade ingredients. Cheap greases, so often compounded by acid processes, from unsuitable vegetables fats and oils, serve only to clog bearings. A trace of sulphuric acid will do more harm to a polished bearing surface than no lubrication. Better grade lubricants are steam cooked, and are made only of high-grade mineral oils and prime animal fats. In choosing a system for the application of solidified oil lubricants the author emphasizes the consideration of seven factors, namely, positive operation, simplification, accessibility, time required to complete lubrication, high-pressure lubrication, margin of safety and the sales advantage.

—STEEL 11-20-30

# HUMAN ELEMENT THAT CAN BE "FELT" BY ROLL TURNERS AND ROLL SUPERINTENDENTS

All along the line experienced man power makes itself felt in Duquesne Rolls.

First—in the men out in the foundry who seem gifted with a sense of quality above everything else. With them it is not just a melting practice, but rather a refining practice carried to the superlative degree.

Second—in the engineers out on the job—in your mill, for example—who first find out what you want to accomplish and then leave nothing undone that will produce that result.

## SEND FOR THE DUQUESNE ROLL ENGINEER

The Duquesne Roll Engineer is accustomed to solving Roll Problems right on the job. Following is the background of training and experience of the 6 experts comprising this staff.

Engineer No. 1—Graduate of the Academy of Mines. Freiberg Saxony Germany. Class of 1894. 27 years practical experience.

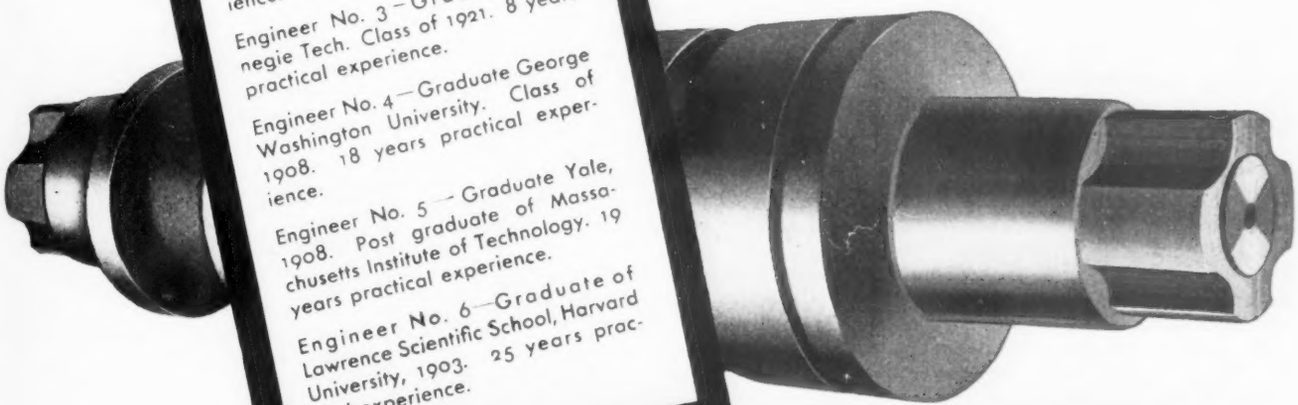
Engineer No. 2—Grew up in the foundry business. Specializing in Rolls. 31 years practical experience.

Engineer No. 3—Graduate Carnegie Tech. Class of 1921. 8 years practical experience.

Engineer No. 4—Graduate George Washington University. Class of 1908. 18 years practical experience.

Engineer No. 5—Graduate Yale, 1908. Post graduate of Massachusetts Institute of Technology. 19 years practical experience.

Engineer No. 6—Graduate of Lawrence Scientific School, Harvard University, 1903. 25 years practical experience.



# DUQUESNE ROLLS

Makers of
Chrome Molybdenum,
Duquesne Special,
Straight Carbon Steel Rolls;
Grain and Iron Alloy Rolls

DUQUESNE STEEL FOUNDRY COMPANY . . . PITTSBURGH, PA.

# Machine Tools and Plant Equipment

«Without machine tools modern machinery could not be built.»
—Joseph W. Roe

## American Standard Cylindrical Fits Are Studied for Revision

BY JOHN GAILLARD
Mechanical Engineer, American Standards Association

IN 1920 a technical committee on "Plain Limit Gages for General Engineering Work" was organized under the procedure of the American Standards association by the American Society of Mechanical Engineers. This committee will now be reorganized to review the existing American Tentative Standard (B4a-1925) on "Tolerances, Allowances and Gages for Metal Fits" to determine whether this should be revised and supplemented. The reorganized committee also will investigate "Methods of Gaging and Specifications for Plain Limit Gages."

**Objections to Present Standard**

It has been found that the American Tentative Standard (B4a-1925) on "Tolerances, Allowances and Gages for Metal Fits," which now has been at the disposal of American industry since 1925, has not been introduced into manufacturing practice to the extent that its importance to industry would seem to warrant. The reorganized committee will investigate the reasons why the national standard has not been widely adopted.

Criticism mainly concerns two points; one, the problem of the use of present standard reamers, and the other, the absence in the standard of fits in accordance with the "basic shaft" system.

The objection has been raised that most commercial reamers cannot be used for the economical production of American standard holes. The remedy might be found in modification of current reamer sizes to requirements of standard holes. Proposals also have been made to maintain the present commercial reamer sizes and adapt the standard hole tolerances to them, which would mean a complete change in the present fundamental plan of specifying holes with tolerances extending upward from the nominal size.

It is interesting to note that unilateral plus tolerances on basic holes, extending from the nominal size as the reference or zero line, have been recognized as the best system to use for a national standard in this country and all others where the problem of fits has been dealt with. It has also been proposed as a basis for bringing about international uniformity of practice. Therefore, it appears inadvisable to make any change in this essential feature of the standard, although possible modification of certain numerical values of allowances and tolerances for the several fits, and an increase in the number of possible standards fits —to give the designer a larger choice—deserve consideration.

Criticism based on the absence of the basic shaft system in the present standard is well founded, in the writer's opinion. While most users of fits may prefer the basic hole system, those who can advantageously use the basic shaft system, should not be ignored. There are several important cases, manufacturers of power transmission equipment for instance, where fits are established almost exclusively between external parts and shafts without any finishing process being required on the latter. Cold drawn steel bars or commercially ground stock is used without additional machining for finish.

**Importance of Basic Shaft Fits**

Tight fits can not be established between the basic holes as now specified in the American standard and the shafting material just referred to, as the manufacturing tolerance on the latter lies below the nominal size. Such mating parts never can give a closer fit, under these conditions, than a so-called "metal to metal" fit, occurring between a basic hole having its minimum size, and a basic shaft having its maximum size. The only way of getting tight fits, in such a case, is to vary the holes to establish different fits with the basic shafts.

All of the national standard systems of fits now in existence, with the exception of the present American and the British standards, comprise both the basic hole and the basic shaft system, thus making it possible to apply that system which is most suitable for its purpose. In Germany, 80 per cent of the standard gages ordered are for fits in the basic hole system, and 20 per cent for fits in the basic shaft system.

It would seem advisable, therefore, that the reorganized technical committee give due consideration to the question whether the present American standards should not be supplemented by a system of fits given in the basic shaft system.

◆

## New Line of Roll Grinders Convenient To Operate

Landis Tool Co., Waynesboro, Pa., has brought out a new line of roll grinders, of which the accompanying illustration shows the operating section of the 48 x 168-inch size. The convenient position of the operator in relation to the controls and wheel contact is clearly indicated. The machine is intended for grinding rolls used in sheet mills, tin plate mills, cold strip, hot strip and bar mills, lithographing, paper mill, brass and copper mills, etc. The body may be ground straight, concaved or crowned and roll necks may be trued up at the same set-up.

The front portion of the bed has a flat and an inverted V bearing surface, both chilled, which support the headstock, footstock and roll carrying heads. The rear portion of the bed carries the grinding wheel carriage on which are mounted the wheel head, eccentric type crowning and concaving mechanism, traverse and reverse mechanisms, operator's platform, and water pump. The wheel carriage is carried on chilled ways, one flat the other inverted V. Sheet

metal covers are provided for guides, which are lubricated by force feed.

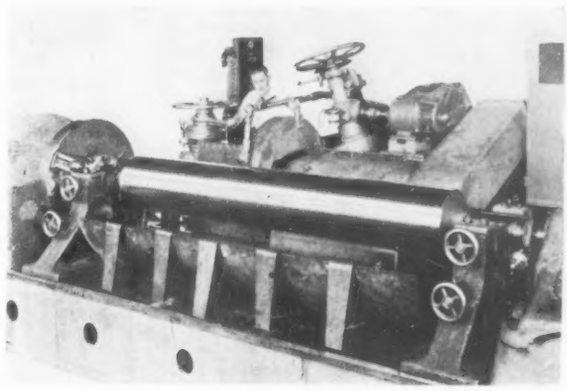
Power for traversing the wheel carriage is supplied by a motor mounted on its top. Transmission from the traversing mechanism is by a large steel worm meshing with a bronze gear mounted on the upper end of a drive shaft set at an angle to the guides. Another worm on the lower end of this shaft engages a heavy rack on the bed. Various traversing speeds are attained by means of a field rheostat, and reversal is accomplished by a reversing controller actuated by reversing dogs. A control quadrant gives either high or low-speed range or completely disengages the mechanism.

The wheel head is fitted with special adjustable steel back babbitt bearings, which with the thrust bearing, receive continuous lubrication. The 36-inch grinding wheel is carried on a heat-treated alloy steel spindle driven at the right-hand end by multiple V belts from a motor mounted on top of the base. Wheel feed is through a screw and half nut, and rapid cross movement of the wheel head is accomplished by electric drive. A motor with reversing drum controller and dynamic breaking is used.

**Work Drive and Support**

The headstock spindle is of large diameter and is driven by herringbone gears from an adjustable speed motor. An equalizing drive to the roll, from diametrically opposite points with equal pressure, is used. This engages the roll direct or through a driving dog. Two-bearing roll carrying heads are furnished unless light work is to be done, in which case three bearing heads are supplied. The crowning and concaving mechanism can be set by chart and graduated scale to give precise results immediately.

Standard machines are available in 36, 48 or 60-inch swing in lengths varying by 2 feet, ranging from 10 to 24 feet. Longer machines are furnished on special order.



*This is one of a new line of grinders which give straight, concave or convex finish to rolls up to 5 feet in diameter and 24 feet long*

◆

## Double End Pipe Machine Has Welded Steel Bed

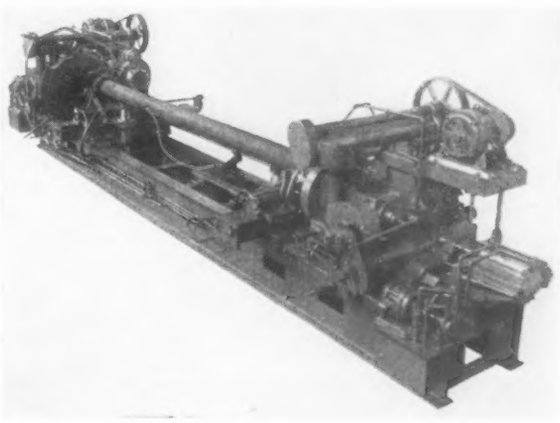
Moline Tool Co., Moline, Ill., has built a machine which will ream, hollow mill, tap and thread, bell and spigot ends of 5, 7 and 9-inch diameter cast-iron gas pipe ranging in length from 6 to 16½ feet. As shown by the accompanying illustration, this is a double-end machine with two spindles in each of the two heads. Operations are performed simultaneously on both ends of a section of pipe, and as soon as the first two operations are finished cross slides shift the section to the other set of spindles.

The bed of the machine is fabricated from structural steel, two 20-inch H beams 28½ feet long being tied together by short I beams which are welded in place at intervals of 36 inches. Brackets and bearing blocks are bolted to this structure, after which the assembly is machined. The tops of the upper flanges of the longitudinal beams are planed, giving surfaces from which all other important points are located.

**Mechanism and Operation**

The bed carries two saddles, that at the left being fixed, while the right-hand one is adjustable to suit various lengths of pipe. These saddles carry spindle units on double V bearings and also carry the spindle feed units which move the tools along the work. Slow feed is through gearing from the main drive and rapid traverse is given by hydraulic units at each end of the machine. Each spindle unit and each hydraulic unit has individual motor drive.

On the bed between the spindle units are cross heads carrying the work-holding fixtures, of the variety known as "cat heads." Locating and traversing of the work is accomplished by pneumatic cylinders, compressed air being drawn from the shop line. The cycle of operations is as follows: Set crossheads at central point; raise the two vertical pistons, swing the pipe over them by crane and set it into the V blocks on the piston ends; lower the pistons so that pipe rests in the cat head and clamp it; traverse crossheads against rear stops where pipe is hollow milled at left end and bored at right end; then traverse crossheads against stops in line with two front spindles where pipe is threaded at left end and tapped at right end; traverse to central position, unclamp the pipe, raise it and unload. It will be noted that all heavy work is accomplished mechanically by power, thus relieving the operator.



*By means of this double-end, 4-spindle machine, bell and spigot ends of cast iron gas pipe are machined simultaneously, ready for screwing the line together*

◆

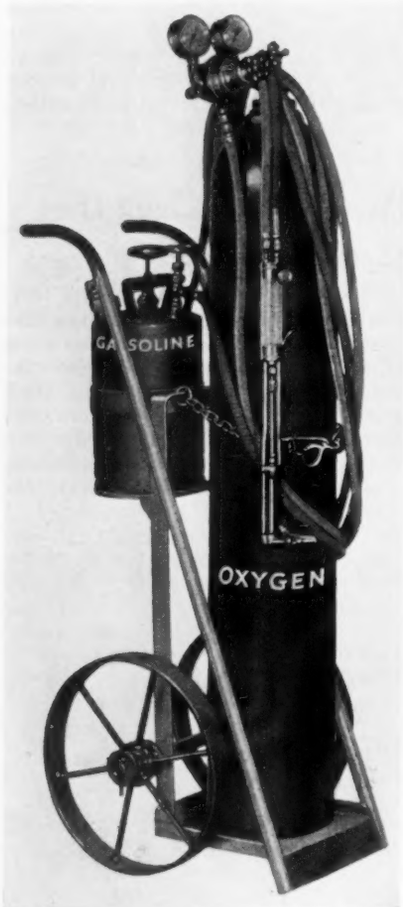
## Flame Cutting Outfit Uses Gasoline and Oxygen

Torchweld Equipment Co., 224 North Carpenter street, Chicago, has brought out a new metal cutting torch outfit using gasoline and oxygen. As indicated by the accompanying illustration, this combination cuts down the weight of the outfit materially, and makes it much easier to handle. The 2-gallon gasoline tank takes the

place of a gas cylinder weighing as much as 235 pounds. Operating cost also is said to be considerably reduced. Flashbacks are impossible in a liquid and this fact has been utilized in the torch design; gasification is carried on only in a small chamber adjacent to the tip.

**Fields of Application**

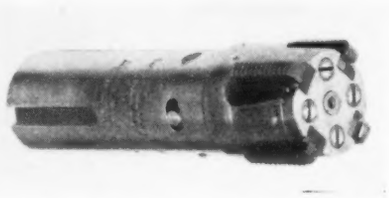
The outfit is recommended for use on both old and new material where rapid and smooth cutting is desirable. It can be used either for hand cutting or in a cutting machine. On account of the ready availability of gasoline the outfit is particularly well adapted for use in small plants remote from supplies of gas, on railroad work, shipbuilding and repair, etc. It has been given thorough tests under operating conditions such as these. The outfit comprises a torch with four gasoline tips, 25 feet of high-pressure oxygen hose, 25 feet of flexible metallic gasoline hose, a welded gasoline tank of 2-gallon capacity, a two-gage high-pressure oxygen regulator, and wrenches, goggles and gloves.




*Gasoline takes place of acetylene on cutting torch outfit*

## New Production Taps Have Diameter Adjustment

National Acme Co., 170 East 131st street, Cleveland, has added to its line of production threading tools a series of noncollapsing adjustable chaser taps, one of which is shown in the accompanying illustration. This type of tap is recommended for



*New production tap has adjustable replaceable chasers*

work on which the use of collapsing taps offers no particular advantages, as in certain classes of pipe tapping, and on work where the tap is passed through.

Chasers readily are replaceable, being retained in slots in the body of the tool by a cover plate. They are interchangeable between the noncollapsing taps and corresponding collapsing taps manufactured by this company. The chasers are supported solidly for their full length by the edges of a hardened steel core piece, which is rotated slightly to give diameter adjustment. This adjustment is made and held by two set screws conveniently located in the shank of the tool. Vital surfaces are precision ground and the threads of the chasers are lapped to exact form and size. These taps are furnished in 11 sizes, ranging in tapping diameter from 1 to 4⅞ inches.

◆

## Heavy-Duty Switch Will Handle Large Motors

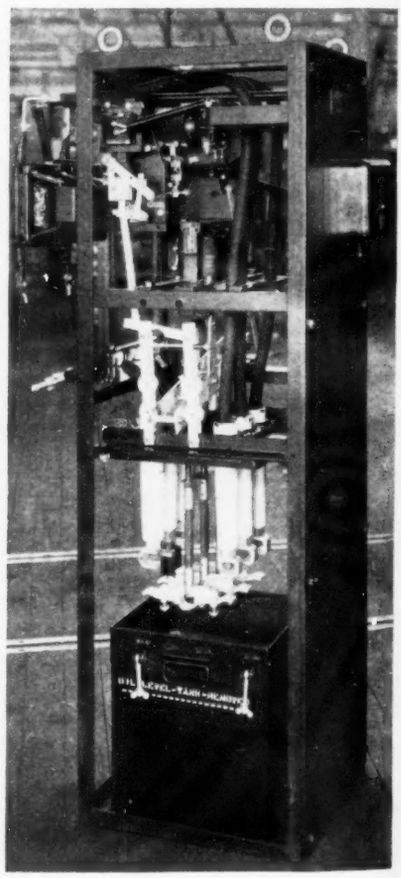
General Electric Co., Schenectady, N. Y., has just brought out an oil immersed magnetic switch for heavy-current duty in controlling large sizes of motors. This new switch, shown in the accompanying illustration, consists of a three-pole, 200 ampere, oil-immersed contactor, a temperature overload relay, two current transformers, and an undervoltage relay, all being supported on a suitable floor-mounted framework which is built with a steel front.

Instantaneous undervoltage protection is obtained with these magnetic switches when used with a drum switch. Time delay undervoltage protection is obtained with them when used with momentary-contact type push-button control. For standard motors the switches are rated at 750 horsepower at 2500 volts, and 1200 horsepower at 4000 volts. They have an approximate weight of 525 pounds and require 5½ gallons of oil each. These switches may be used on 6600-volt, 750 horsepower maximum, by providing 6600-volt current transformers.

◆

## Large Internal Grinder Does Roughing and Finishing

Heald Machine Co., Worcester, Mass., announces a new heavy-duty internal grinding machine. The accompanying illustration shows this machine, which weighs 9 tons and is about twice the size of any similar machine heretofore built by this company. Three motors, totaling 31 horsepower, are required to drive this grinder, one of 25 horsepower being used for the wheel drive alone. The machine is capable of hogging out metal from large gears, bearing races, rolls, pipe, sheaves,



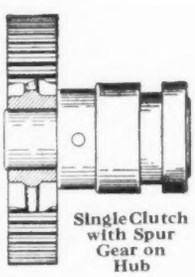
*Switch unit has special provisions for heavy current service*

THE JOHNSON FRICTION CLUTCH

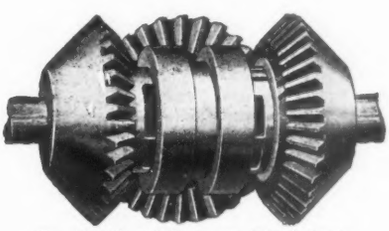
# SUPER CLUTCHES

## *for* INDIVIDUAL POWER TRANSMISSION PROBLEMS

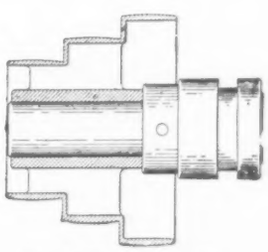
by Carlyle Johnson



Single Clutch with Spur Gear on Hub



Double Clutch Between Bevel Gears



Single Clutch with Cone Pulley on Hub

Single Clutch with Pulley

Single Clutch, Exterior

Single Clutch, Sectioned

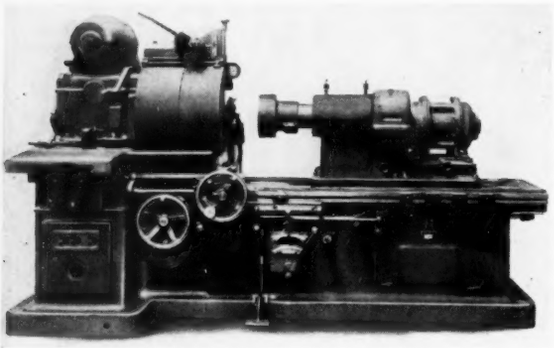
Double Clutch—Exterior

# INVESTIGATE!

WIRE, PHONE OR WRITE FOR CATALOG "WHITE—11"

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN.

etc., and it has the accuracy to finish work to close limits. It will grind straight or taper bores and will do face grinding without change of set-up. Bores from 3 to 21 inches in diameter can be ground up to maximum depth of 15 inches. The swing is 35 inches.



*Weight of 9 tons and capacity to grind 21-inch diameter holes 15 inches deep, indicates unusual size of this internal grinding machine*

The machine is designed as a self-contained unit, each section being accessible. It is built low to facilitate handling the work and the low center of gravity gives vibrationless performance on close finishing operations. The base is a box-type semi-steel casting weighing 4 tons. It supports the table on one V and one flat way which extend the full length and which are exceptionally wide. The end of the base supporting the work head is of T-section which provides for the cross-wise movement of the wheel. The main table weighs more than a ton, the ways being oil lubricated under pressure. Constant pressure hydraulic feed is used, which gives complete control from a reverse box and valves at the front of the machine which are actuated by dogs and by conveniently located hand levers. Throttle control gives feeds up to 25 feet per minute.

**Spindle Design**

Wheel head and driving motor are mounted on a one-piece casting constituting spindle bracket, motor platform and lower half of the belt guard. The spindle, as is the case with all other revolving members, is mounted on heavy-duty antifriction bearings and is held in place by a cast iron cap bolted to the spindle cradle. Spindle drive is direct from the motor by a 7-inch belt kept at proper tension by a spring idler, which gives maximum wrap around both pulleys. Spindle bearings are lubricated by sight-feed oilers. The work head is mounted on a cross slide at the T-end of the base and is clamped by bolts in a full circular T-slot in the cross slide. Swivelling adjustment by crank operated screw is provided up to 22½ degrees. The work spindle is hardened and ground, runs on antifriction bearings and is driven through a hardened and ground worm and bronze worm gear, running in an oil bath, by a 3-horsepower adjustable-speed direct-current motor. Work spindle speeds from 35 to 140 revolutions per minute are available.

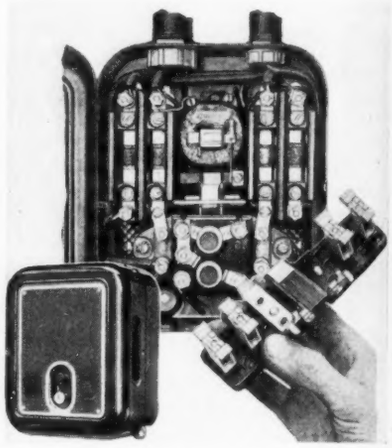
A dial indicator enables the operator to follow the progress of the work by direct diameter readings, which not only tell him when the hole is to size but also enable him to true the wheel at any predetermined point. The size control has a diamond-tipped finger which contacts with the bore during the grinding operation but which is swung out of the way by a hand lever during unchucking and reloading. The wheel truing device is swung on a preloaded ball bearing and is hydraulically operated in such a way that its diamond trues at the exact point where the wheel grinds, at 90 degrees to the axis and parallel to the main table ways. Coolant is delivered at the grinding point, from a tank and pump unit in the base, in such volume as to carry away heat and sludge from the heaviest cuts. The flow begins automatically when the wheel enters the bore and stops when the wheel is withdrawn.

◆

## Controller for Small Motors Has Improved Contactor

Cutler-Hammer Inc., Twelfth and St. Paul avenue, Milwaukee, has redesigned its line of automatic starters for small motors to incorporate a new "twin-break" magnetic contactor. The accompanying illustration shows the external appearance of the new starter, as well as the internal arrangement. The contact board is removed to show the silver, butt-type contacts.

The coin silver contacts retain current carrying capacity even if oxidized, and give little temperature rise. The twin-break principle is said to reduce arc voltage by half, and special arc pockets prevent the formation of destructive arcs by reducing the air content around the contacts. They also act as shields against interference by wires running alongside the contactor. A magnetic latch has been added to prevent accidental closure of the contacts in case the starter is bumped or tilted. The latch must be drawn aside by the operating magnet before the contacts can close. This is particularly important on moving machinery. A new hinge insures correct placing of the board before the starter can operate.



*Coin silver contacts are employed in this "twin-break" unit*

These new contactors are made in three and four-pole types. Maximum rating for two or three phase are: 3 horsepower, 110 volts; 5 horsepower, 220 volts; and 7½ horsepower, 440 or 550 volts.

◆

## Audio-Frequency Impulses Give Remote Control

General Electric Co., Schenectady, N. Y., has introduced a remote control system for automatic electric devices which depends upon audio-frequency impulses. Conditions involving pumps, valves, gates, etc. are carried over two wire lines and become evident by audible signals. Equipment in the operator's station consists of a wall panel carrying calling dial, reset key, howler and audio-frequency transmitter. Remote operating equipment consists of selector switches, relays, etc. which respond to code signals dialed by the operator. Position of selector switches checks back through the howler, upon which starting signals are dialed.

# Price Stabilization Is Contagious

## Heavy Steel's Lead Likely To Be Followed in Lighter Products — Steel Specifications and Output Decline Again—Sentiment for Long Pull Good

STRENGTH imparted to the steel bar, plate and shape market by the stand of producers on 1.60c, Pittsburgh, and continued weakness in their products seem likely to impel makers of sheets, strip and wire products also to attempt stabilization. In fact, an announcement on sheets and strip may be issued this week.

These efforts to put steel prices on a more remunerative basis, initiated a month ago and stimulated measurably by the Carnegie Steel Co.'s pronouncement last week, disclose how thoroughly the industry discounts business for the remainder of the year and how strongly it anticipates improvement in the first quarter.

Producers indicate they will attempt to limit current levels to the fourth quarter or to specific commitments early next quarter, foreshadowing an increase if expectations concerning volume are realized. This concentration on price, with the rise in copper, has offset whatever injury might be done to sentiment by a further decline in specifying and production.

On what might be considered the first test since producers of heavy steel, as noted Oct. 16, opened their campaign for higher prices, the 1.60c price has held. This price was quoted generally Nov. 17 on 42,000 tons of plates, shapes and bars for the Pennsylvania railroad, which has also placed 15,000 tons of these products.

Railroad business other than the Pennsylvania's steel requirements for its own shops is quieter this week. The Wabash is inquiring for 10,000 to 11,000 tons of rails, with an Erie inquiry maturing. New York has bought 10,000 tons of rails for its subways from the Bethlehem Steel Co. Expected heavy rail inquiry from the New York Central and other roads has not materialized, but is only deferred.

Despite the formal letting of 7800 tons for the Ohio river bridge at Evansville, Ind., structural steel award this week totaled only 22,322 tons, compared with 30,128 tons last week and 52,792 tons a year ago. A seasonal drift downward is evident in both awards and new inquiry, which this week approximates 42,500 tons, including 15,000 tons for a Pennsylvania railroad viaduct at West Philadelphia. Bids will be taken Dec. 15 on 12,000 tons for Niagara river bridges at Buffalo. Concrete reinforcing bar business is seasonably high.

Youngstown district line pipe mills can see the bottom of their backlogs, and with little new business in prospect sharp curtailment in production next month seems certain. Western wire mills visualize heavier demand after the turn of the year, and are planning schedules accordingly. Sheet, strip, bar and alloy steel business continues to settle slowly, chiefly because automotive requirements are light. There is a slight improvement in contracting for first-half tin plate.

Shipments of pig iron in many districts are slightly higher and at Buffalo the price structure is mildly firmer. Coke is inactive, with the furnace grade now $2.50 to $2.60. Scrap prices, while soft, have not deteriorated this week as much as last, and at Chicago the sale of heavy melting steel at $10.50 has helped stem the tide. Semifinished material is inactive, without a test of prices.

Steelmaking operations are off one point, to 43-45 per cent. Youngstown mills are at 52 per cent, against 50 last week, and Cleveland is up from 35 per cent to 44. But Birmingham at 43 per cent, Chicago at 45, Buffalo at 46 and Pittsburgh at 45 are each down two points.

Typical of the weakness which producers seek to correct, galvanized sheets are more common at 2.90c, Pittsburgh. Autobody sheets, formerly 3.40c, have been shaded $2. Black sheets are off $1 at Chicago. The bottom of the range on narrow hot strip is 1.65c, Pittsburgh, and on wide 1.55c. Nails to jobbers are $1.90, and wire is not firm at 2.30c, Pittsburgh.

These concessions are reflected in a decline of 12 cents in STEEL's market composite, dropping this index to $31.86, a new low for the decade and a decline of 14 per cent this year.

### Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe.

| | |
|---|---|
| **This week (Nov. 19, 1930)** | **$31.86** |
| **Last week (Nov. 12, 1930)** | **31.98** |
| **One month ago (October, 1930)** | **32.26** |
| **Three months ago (August, 1930)** | **32.99** |
| **One year ago (November 1929)** | **36.03** |
| **Ten years ago (November 1920)** | **63.75** |

# Comparative Prices of Iron, Steel and Coke

**Representative Market Figures for This Week, Last Month, Three Months and One Year Ago**

| | Nov. 19, 1930 | Oct. 1930 | Aug. 1930 | Nov. 1929 |
|---|---|---|---|---|
| **PIG IRON** | | | | |
| Bessemer, del. Pittsburgh | $18.76 | 19.36 | 20.26 | 20.76 |
| Basic, valley | 17.00 | 17.00 | 18.00 | 18.50 |
| Basic, eastern del. eastern Pa. | 17.50 | 17.50 | 18.00 | 19.75 |
| No. 2 foundry, del. Pittsburgh | 18.26 | 18.46 | 19.26 | 19.76 |
| No. 2 foundry, Chicago | 17.50 | 17.50 | 17.50 | 20.00 |
| *Southern No. 2, Birmingham | 14.00 | 14.00 | 14.00 | 14.00 |
| **No. 2X, Virginia furnace | 18.25 | 18.25 | 18.25 | 18.25 |
| **No. 2X, Eastern del. Phila. | 19.26 | 19.26 | 19.76 | 22.26 |
| Malleable, valley | 17.50 | 17.80 | 18.50 | 19.00 |
| Malleable, Chicago | 17.50 | 17.50 | 17.50 | 20.00 |
| Lake Superior, charcoal, del. Chi. | 27.04 | 27.04 | 27.04 | 27.04 |
| Gray forge, del. Pittsburgh | 17.63 | 17.93 | 18.63 | 19.13 |
| Ferromanganese, del. Pittsburgh | 103.79 | 103.79 | 103.79 | 109.79 |

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12 to $13, Birmingham. **2.25 to 2.75 silicon.

| | | | | |
|---|---|---|---|---|
| **COKE** | | | | |
| Connellsville furnace, ovens | 2.55 | 2.60 | 2.50 | 2.65 |
| Connellsville foundry, ovens | 3.50 | 3.50 | 3.50 | 3.55 |
| **SEMIFINISHED MATERIAL** | | | | |
| Sheet bars, open-hearth, Youngs. | 31.00 | 31.00 | 31.00 | 35.00 |
| Sheets bars, open-hearth, Pitts. | 31.00 | 31.00 | 31.00 | 35.00 |
| Billets, open-hearth, Pittsburgh | 31.00 | 31.00 | 31.00 | 35.00 |
| Wire rods, Pittsburgh | 36.00 | 36.00 | 36.00 | 40.00 |

| | Nov. 19, 1930 | Oct. 1930 | Aug. 1930 | Nov. 1929 |
|---|---|---|---|---|
| **FINISHED MATERIAL** | | | | |
| Steel bars, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.90 |
| Steel bars, Chicago | 1.70 | 1.70 | 1.75 | 2.00 |
| Steel bars, Philadelphia | 1.89 | 1.89 | 1.94 | 2.22 |
| Iron bars, Chicago | 1.70 | 1.70 | 1.75 | 2.00 |
| Shapes, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.90 |
| Shapes, Philadelphia | 1.66 | 1.76 | 1.66 | 1.91 |
| Shapes, Chicago | 1.70 | 1.70 | 1.75 | 2.00 |
| Tank plates, Pittsburgh | 1.60 | 1.60 | 1.65 | 1.90 |
| Tank plates, Philadelphia | 1.80½ | 1.805 | 1.805 | 2.10 |
| Tank plates, Chicago | 1.70 | 1.70 | 1.75 | 2.00 |
| Sheets, blue anl., No. 13, Pitts. | 2.05 | 2.15 | 2.15 | 2.35 |
| Sheets, black, No. 24, Pitts. | 2.35 | 2.40 | 2.50 | 2.75 |
| Sheets, gal., No. 24, Pittsburgh | 2.90 | 3.00 | 3.10 | 3.45 |
| Sheets, black, No. 24, Chicago | 2.50 | 2.60 | 2.60 | 2.95 |
| Sheets, blue anl., No. 13, Chicago | 2.30 | 2.30 | 2.30 | 2.50 |
| Sheets, galvanized, No. 24, Chi. | 3.15 | 3.20 | 3.20 | 3.65 |
| Plain wire, Pittsburgh | 2.30 | 2.30 | 2.30 | 2.40 |
| Wire nails, Pittsburgh | 1.90 | 2.00 | 2.05 | 2.40 |
| Tin plate, per base box, Pitts. | 5.00 | 5.00 | 5.25 | 5.35 |
| **SCRAP** | | | | |
| Heavy melting steel, Pitts. | 13.00 | 14.80 | 15.20 | 16.30 |
| Heavy melting steel, eastern Pa. | 11.50 | 12.00 | 12.625 | 15.125 |
| Heavy melting steel, Chicago | 10.00 | 11.55 | 12.00 | 13.05 |
| No. 1 wrought, eastern Pa. | 13.50 | 14.25 | 14.25 | 16.25 |
| No. 1 wrought, Chicago | 10.00 | 10.95 | 11.25 | 13.85 |
| Rails for rolling, Chicago | 13.00 | 14.10 | 14.50 | 15.30 |

# Sheets

**Automobile Sheets Shaded to 3.30c by Some Makers—Black Down at Chicago—Stabilization**

SHEET PRICES, PAGE 79

**Pittsburgh**—Sheet producers look for an early strengthening in prices. The market recently has failed to display strength but some move to stabilize quotations is looked for shortly. The market currently is 2.35c to 2.45c for black sheets, but galvanized sheets are going more freely at 2.90c, with 3.00c usually quoted to consumers. Blue annealed plates continue 1.90c to 2.00c, with No. 13 gage sheets 2.05c to 2.15c. Autobody usually are 3.40c. Business continues near the lowest level of the year, although some orders are being received because of consumers' fears of a stronger market in the near future. Automotive tonnage lacks improvement and most other consumers are taking less than a month ago. Mill operations are unchanged at 40 to 45 per cent.

**New York**—The market for sheets is dull. Galvanized are 2.90c to 3.00c, Pittsburgh; black, 2.35c; blue annealed plates, 1.90c; and blue annealed sheets, 2.05c. Prices appear firmer at these levels.

**Philadelphia**—Demand for sheets is smaller than in the early part of November. Prices are steady.

**Cleveland**—Specifications for autobody sheets have increased slightly. Weakness is noted in the price structure as 3.30c, Pittsburgh, has appeared, against a recent minimum of 3.40c. Stove manufacturers are taking a fair amount of enameling stock. An electrical refrigerator manufacturer has increased operations to a 5-day-week basis, and is issuing larger specifications. Black sheets are 2.25c, despite reports that some consumers have been able to purchase at lower figures. Galvanized seem fairly steady at 3.00c.

**Cincinnati**—An improvement is noted in inquiries for sheets. Consumers' inventories are reported low.

**Chicago**—Black sheets have yielded to steady price pressure and recent falling off in specifications, the base price now being 2.45c to 2.55c, Gary and Indiana Harbor. This represents a decline of $1 to $2 a ton. The volume of specifications has dropped off in most grades, due largely to seasonal conditions and inventory precautions. Other prices are unchanged.

**Youngstown, O.**—Independent sheet mill operations show a slight increase, due to the resumption of the Empire Steel Corp.'s Falcon works at Niles, O. Other mills are running at 40 to 65 per cent. Orders are small and generally for the common grades. General approval of the new sheet extra list as published recently is expressed. Quotations generally are unchanged.

**St. Louis**—Sheet specifications from builders of automobiles, railroad cars and agricultural implements are below recent expectations. Miscellaneous sales are limited to small lots for immediate shipment.

## Lower Extras for Drawing Qualities in Sheets

Simplification of extras on sheets for drawing qualities, mentioned in STEEL last week, includes three extras for various gages for both deep drawing and extra deep drawing. These replace the former extra of 25 cents for deep drawing and 50 cents for extra deep drawing. For No. 12 gage and heavier the extra for both grades is 15 cents per hundred pounds; for No. 13 to 21-gage, inclusive, 25 cents; for No. 22-gage and lighter, 35 cents.

Improved methods of normalizing and other processes have resulted in uniformly ductile sheets suitable for all drawing operations, the consumer being given advantage of these results in the lessened extras.

Railroad freight revenue per ton-mile declined from 1.275 cents to 1.077 cents from 1921 to 1929, or 15 per cent.

# Current Finished Steel Prices

**Prices in cents per pound unless otherwise stated**

## Steel Sheets

**SHEET MILL BLACK, NO. 24**

| | |
|---|---|
| Pittsburgh base | 2.35c to 2.45c |
| Philadelphia, delivered | 2.64c to 2.74c |
| Gary, Indiana Harbor | 2.45c to 2.55c |
| Chicago, delivered | 2.50c to 2.60c |
| Birmingham, base | 2.60c |
| St. Louis, del. | 2.80½c |

**TIN MILL BLACK, NO. 28**

| | |
|---|---|
| Pittsburgh, base | 2.70c |
| Gary, base | 2.80c |

**GALVANIZED NO. 24**

| | |
|---|---|
| Pittsburgh, base | 2.90c to 3.00c |
| Philadelphia, delivered | 3.19c to 3.29c |
| Gary Indiana Harbor | 3.10c |
| Chicago, delivered | 3.15c |
| Birmingham, base | 3.15c |
| St. Louis, del. | 3.15½c |

**BLUE ANNEALED SHEETS NO. 13**

| | |
|---|---|
| Pittsburgh, base | 2.05c to 2.15c |
| Chicago, district mills | 2.25c |
| Chicago, delivered | 2.30c |
| St. Louis, delivered | 2.50½c |
| Philadelphia, delivered | 2.34c to 2.44c |
| Birmingham | 2.30c |

**BLUE ANNEALED PLATES, NO. 9-10**

| | |
|---|---|
| Pittsburgh, base | 1.90c to 2.00c |
| Chicago, district mills | 2.10c |
| Chicago, delivered | 2.15c |
| Philadelphia, delivered | 2.19c to 2.29c |
| St. Louis, delivered | 2.35½c |
| Birmingham | 2.15c |

**AUTOMOBILE NO. 20**

| | |
|---|---|
| Pittsburgh base | 3.40c |

**FURNITURE NO. 24**

| | |
|---|---|
| Pittsburgh | 3.60c |

## Tin and Terne Plate

**Prices per 100-pound box Pittsburgh**

| | |
|---|---|
| Tin plate, coke base | 5.00 |
| Gary, Ind., base 10 cents higher. | |
| Long ternes, 24, assorted | 3.55c |
| Long ternes, 24, unassorted | 3.45c |

## Wire Products

**(To Jobbers-Merchant Trade)**

F.o.b. Pittsburgh, Cleveland base
(Per 100 pound keg)

| | |
|---|---|
| Standard wire nails | $1.90 and 1.95 |
| Cement coated nails | 1.90 and 1.95 |
| Galvanized nails | 3.95 and 4.00 |

(Per pound)

| | |
|---|---|
| Polished staples | 2.40c and 2.45c |
| Galvanized staples | 2.65c and 2.70c |
| Barbed wire, gal. | 2.60c and 2.65c |
| Annealed fence wire | 2.10c and 2.15c |
| Galvanized wire | 2.55c and 2.60c |

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

**(To Manufacturing Trade)**

| | |
|---|---|
| Plain wire, 6-9 gage | 2.30c |
| Spring wire | 3.30c |
| Wire, delivered Detroit | 2.53½c |
| Nails, delivered Detroit | $2.38½ |

Joliet, DeKalb, Waukegan, Ill., Anderson, Ind., Chicago, $1 over Pitts.-Cleve.; Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

## Rivets

| | |
|---|---|
| Struc. c.l., Pitts.-Cleve. | 2.75c |
| Struc., c.l., Chicago | 2.85c |
| **7/16-inch and smaller, Pitts. | 70, 10 and 5 off |
| Chi., Cleve. | 70 to 70, 10 and 5 off |

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

## Steel Plates

| | |
|---|---|
| Base, Pittsburgh | 1.60c |
| Philadelphia, del. | 1.80½c |
| New York, del. | 1.88c |
| Boston, del. | 2.00c |
| Chicago, base | 1.70c to 1.75c |
| Cleveland, delivered | 1.78½c to 1.88½c |
| Lackawanna, N. Y., base | 1.70c |
| Birmingham, base | 1.75c |
| Coatesville, Pa., base | 1.70c |
| Pacific Coast, c.i.f. | 2.05c to 2.15c |
| St. Louis, del. | 2.00½c |

## Structural Shapes

| | |
|---|---|
| Base, Pittsburgh | 1.60c |
| Philadelphia, del. | 1.66c to 1.76c |
| New York, del. | 1.75½c to 1.85½c |
| Boston, del. | 1.88½c to 1.98½c |
| Chicago, base | 1.70c to 1.75c |
| Cleveland, delivered | 1.83½c to 1.88½c |
| Lackawanna, N. Y., base | 1.70c |
| Birmingham, base | 1.75c |
| Pacific Coast, c.i.f. | 2.15c to 2.25c |

## Bars

**SOFT STEEL**

| | |
|---|---|
| Pittsburgh, base | 1.60c |
| Chicago, base | 1.70c to 1.75c |
| Birmingham, base | 1.75c to 1.80c |
| Lackawanna, N. Y., base | 1.70c to 1.75c |
| Pacific Coast, c.i.f. | 2.25c to 2.35c |
| Cleve. base, local del. | 1.65c |
| Do. outside delivery | 1.60c |
| Philadelphia, del. | 1.89c |
| New York, delivered | 1.93c to 1.98c |
| Boston, delivered | 2.00c to 2.05c |
| Pittsburgh, cold finish | 1.75c to 1.80c |
| Pittsburgh, forg. qual. | 1.85c to 1.90c |

**RAIL STEEL**

| | |
|---|---|
| Chicago Heights | 1.65c |
| Eastern mills | 1.65c |

**IRON**

| | |
|---|---|
| Chicago, base | 1.70c |
| New York, delivered | 1.93c to 1.98c |
| Philadelphia, delivered | 1.89c to 1.94c |
| Pittsburgh, refined | 2.75c to 4.25c |

**REINFORCING**

| | |
|---|---|
| Pitts., billet cut lengths | 1.90c to 2.00c |
| Stock lengths, mill | 1.65c to 1.75c |
| Chi. billet, over 200 tons | 1.70c to 1.85c |
| 30 to 200 tons | 2.00c |
| Under 30 tons | 2.45c to 2.85c |
| **Chi., rail steel, over 30 tons** | **1.50c to 1.60c** |
| Under 30 tons | 2.10c to 2.50c |
| Philadelphia, cut lengths | 2.04c to 2.09c |

## Cold-Finished Steel Bars and Shafting

| | |
|---|---|
| Base, Pittsburgh, Chicago, Buffalo and Cleveland | 2.10c |
| Shafting, turned and ground, mill | 2.45c to 2.90c |

## Corrosion, Heat Resist. Alloys

**Base, Pittsburgh**

**18 per cent chrome, 8 per cent nickel**

Sheets, 35c; plates 31c; bars 28c

| | A | B | C | D |
|---|---|---|---|---|
| Bars | 19c | 20.5c | 23c | 28c |
| Plates | 22c | 23.5c | 26c | 31c |
| Sheets | 26c | 27.5c | 30c | 35c |
| Hot strip | 19c | 20.5c | 23c | 28c |
| Cold strip | 28c | 29.5c | 32c | 37c |

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

## Wrought Washers

| | |
|---|---|
| Carloads, Pitts. dist. | $6.50 to $6.75 off |
| Carloads, Chicago dist. | 6.70 to 6.80 off |

## Alloy Steel

**Hot Rolled—F.o.b. Mills**

Alloy Quality Bar Base is 2.65c

| S.A.E. | Alloy Diff. | S.A.E. | Alloy Diff. |
|---|---|---|---|
| 2000 | 0.25 | 1.25-1.75 Ni | 1.05 |
| 2100 | 0.55 | 5100 .80-1.10 Cr. | 0.45 |
| 2300 | 1.50 | 5100 Chr. spring | 0.20 |
| 2500 | 2.25 | 6100 bars | 1.20 |
| 3100 | 0.55 | 6100 Spring | 0.95 |
| 3200 | 1.35 | Chr., Ni., Van. | 1.50 |
| 3300 | 3.80 | Carbon Van. | 0.95 |
| 3400 | 3.20 | 9250 (flats) | 0.25 |
| 4100 .15 to .25 Mo. | 0.50 | 9250 (rds., sq.) | 0.50 |
| 4600.20 | 30 mo. | | |

## Strip, Hoops, Bands

| | |
|---|---|
| Hot strip, to 6-in., Pitts. | 1.65c to 1.70c |
| Hot strip 6 1/16 to 24-in. Pitts. | 1.55c to 1.60c |
| Hot strip, bands 6 in. and under, Chicago | 1.80c |
| Do. 6 1/16 to 24 in. | 1.70c |
| Cooperage hoop, Pitts. | 1.90c to 2.00c |
| Do, Chicago | 2.00c to 2.10c |
| Cold rolled strip, Pitts., Cleve., 3 tons, over | 2.35c to 2.45c |
| Worcester, 3 tons, over | 2.50c to 2.60c |

## Rails, Track Material

| | |
|---|---|
| Standard bess. and open hearth rails, mill | $43.00 |
| Relay rails, Pitts., 60 to 90 lb. | $24.00 to 28.00 |
| Light rails, 25-45, mills | $34.00 |
| Angle bars, Chi. base | 2.75c |
| Spikes, railroad, mills | 2.80c |
| Spikes, railroad, 7/16-in. and smaller, Pitts. | 2.80c |
| Spikes boat, barge, Pitts. | 3.00c |
| Spikes, railroad, Chi. | 2.80c |
| Track bolts, Pitts., steam roads | 3.80c |
| Do. standard, jobbers | 73 off list |
| Track bolts, Chicago | 3.80c |
| Tie plate, mills | $39.00 to 41.50 |

## Bolts and Nuts

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

**CARRIAGE BOLTS**

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

**MACHINE BOLTS**

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts ..... 73 off

Tire bolts, 60, 10 and 10 off.

Stove bolts, 80, 10, 10, 5 off in pkgs.; 80, 10, 5, 2½ off in bulk.

Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

**NUTS**

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 80-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 85-5 off

Upset 1 in. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

## Cut Nails, Chain, Piling

| | |
|---|---|
| Cut nails, c.l., mills | 2.45c |
| Do. less carloads | 2.55c |
| Chain, BB, BBB, 9/16-1½ in. | 33 1/3 off |
| Sheet piling, Pitts. | 2.00c |

# Bars

**Chicago Mills Find Bookings Gaining—Producers Stand Firmly on Minimum Price Level**

BAR PRICES, PAGE 79

**Chicago** — Bar shipments and specifications are holding recent gains. One producer reports specifications of all bar mill products nearly double a week ago, with the average for half the month above October. This is attributed largely to bar products ordered out by cold finishers and parts makers for the automotive trade. This producer reports finished steel specifications above the average of the last 30 days. Road machinery is quiet. Implement gains are slow. With the exception of two western plants, implement operations remain at about 3 days a week. Carbon bar schedules are 60 per cent, and alloy mill operations 40. Soft steel bars are quoted at a minimum of 1.70c, mills.

**New York**—Commercial steel bars continue to hold at 1.60c to 1.65c, Pittsburgh, with demand light and deliveries ranging one to three weeks at most plants, depending upon specifications.

**Pittsburgh**—Steel bar producers are taking a firm stand at 1.60c, Pittsburgh, on new business. Demand continues light and slightly smaller than a month ago. Cold-bar finishers are taking smaller lots and demands of most consumers are near the lowest level of the year. Producers have made no intimation of the probable market for first quarter.

**Cleveland**—Specifications for steel bars have increased but slightly because of better operations among automobile manufacturers. All orders are small for quick shipment, stocks being low. Diversity of demand is helping the general situation somewhat, although specifications outside of automotive industries are on the same plane as for several weeks past. Bars are quoted 1.60c, Cleveland or Pittsburgh, local mills naming 1.65c, Cleveland, still for local delivery.

**Youngstown, O.**—The $6 to $10 a ton quantity extra on steel bars is being followed by independent mills here, generally with satisfaction. They thus avoid small-lot business in connection with other product sales to old customers. This new extra is diverting this business to the jobbers. New steel bar business continues confined mostly to carloads for immediate delivery. The general quotation is 1.60c, Pittsburgh.

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Thermatrol Mfg. Co., Springfield, Mass., is employing the largest force in its history on day and night operations for radio and special production.

## Cold-Finished Market Lacks Sustained Buying

Cold Finished Prices, Page 79

**Pittsburgh**—Cold-finished bar tonnage so far this month is off slightly from the October period. The several automobile companies now introducing new models are releasing some business, but such orders involve only small lots. Other consumers also are adjusting their purchases to near-future requirements. The market is held fairly well at 2.10c to most buyers, with 2.00c more general in the Detroit district.

**Cleveland**—Cold-finished bar producers report a slight upturn in specifications. This increase mainly is automotive in character. A few note no improvement in industries outside of the automotive field. The market still is quoted 2.00c to 2.10c, Cleveland.

## Standards Are Reaffirmed

Washington—The simplified practice recommendation on sheet steel has been reaffirmed without change for one year by the standing committee of the industry, co-operating with the department of commerce.

Similar action has been taken in regard to the simplified practice recommendation on eaves trough, conductor pipes, conductor elbows and fittings, steel lockers, tin plate and special rods.

# Plates

**Large Tonnages Placed and Pending for Eastern Railroads —Additional Material Released**

PLATE PRICES, PAGE 79

**Chicago**—Award of 150 miles of large diameter steel pipe to the Milwaukee maker by the Texas Construction Co., subsidiary of Electric Bond & Share Corp., for a Louisiana line, places about 25,000 tons of skelp on the books of western mills. About half of this has just been released. Line pipe production at Milwaukee will remain at about five miles daily for the remainder of this year. Pipe line prospects are reported good due to contemplated natural gas expansions and additonal lines for cross country transportation of refined gasoline. About 1000 tons of miscellaneous tank work was awarded. Tank fabricators report a diversified business. Plate mill operations remain at about 50 to 60 per cent. Quotations are based on 1.70c, Chicago.

**New York**—Plates again are steady at 1.70c, Coatesville, Pa., with less than carload lots going at $1 a ton premium. Tank work and pipe tonnage is light.

**Philadelphia**—Demand for plates for cars features the market. A considerable tonnage is included in the Pennsylvania railroad's preliminary commitments with Pittsburgh mills for about 20,000 tons of plates, shapes and bars for 1500 gondolas, and the 42,000 tons of plates, shapes and bars on which the Pennsylvania opened bids Monday. Mills quoted 1.60c, nearest point on Pennsylvania tracks, or equivalent. An eastern mill booked 7000 tons of car plates, and about 20,000 tons now are under negotiation for 2000 Baltimore & Ohio cars, of which 1000 are to be built in the railroad's shops and 1000 in the Baltimore plant of the Standard Steel Car Co. The Pennsylvania railroad has placed some miscellaneous tonnages for repairs. The price continues 1.70c, base, Coatesville, subject to concessions on special business. Eastern mills are operating at 40 to 50 per cent.

**Pittsburgh**—New plate tonnage is slow to develop. Tank work is dull and producers of lapwelded pipe continue to reduce backlogs. Recent orders for river equipment involve 250 tons but new inquiry is light. Plates continue 1.60c Pittsburgh.

## Contracts Placed

1800 tons, 600 car underframes for Pacific Fruit Express Co., San Francisco, to Western Pipe & Steel Co., Los Angeles.

800 tons, sheet piling, federal work, Detroit and vicinity, to Jones & Laughlin Steel Corp., Pittsburgh.

700 tons, sheet piling, South street sewer, Detroit, to Jones & Laughlin

Steel Corp., Pittsburgh.

250 tons, two pile driver hulls for United States engineers, Memphis, Tenn., to Nashville Bridge Co., Nashville, Tenn; one derrick boat for same interest to McClintic-Marshall Co., Pittsburgh.

100 tons, municipal water tank, Newton, N. J., to Chicago Bridge & Iron Works, Chicago.

## Contracts Pending

20,000 tons for 2000 cars for Baltimore & Ohio railroad.

3000 tons, for crusher to be built at Mare Island navy yard, San Francisco district. Bids opened.

500 tons, flues, stacks and tanks for the United States Metals Refining Co., Chrome, N. J., reported placed with the United Dry Docks Inc., New York.

180 tons, sheet piling, overcrossing bridge, Westchester County Park commission; also 72 tons reinforcing bars; bids in.

150 tons, three maneuver boats for United States engineers, Pittsburgh district; bids close Dec. 10.

Unstated tonnage, 48 and 60-inch steel pipe for department of water supply and electricity, New York, for installation in Queens, specifications expected out at the close of this month.

## Iron Ore Season Closing; Larger Stocks in Prospect

**Iron Ore Prices, Page 90**

**Cleveland**—Stocks of iron ore at lower lake ports and furnaces, amounting to 41,091,680 tons, are slightly less than a year ago, but at the current rate of consumption they will be above normal in the spring. The United States Steel Corp. has stopped shipping iron ore from its mines, and the lake season probably will close this month, bringing the total tonnage for the year to about 48,000,000, compared with 66,000,000 in 1929. Following is the current report of consumption and stocks issued by the Lake Superior Iron Ore association:

| | Tons |
|---|---|
| Ore consumed in September.. | 3,281,573 |
| Ore consumed in October..... | 3,050,060 |
| Decrease in October ..... | 231,513 |
| Ore consumed in October, 1929 ..... | 5,365,813 |
| Ore at furnaces Nov. 1, 1930.. | 34,750,072 |
| Ore on Lake Erie docks Nov. 1, 1930 ..... | 6,341,608 |
| Total at furnaces and Lake Erie docks Nov. 1, 1930.... | 41,091,680 |
| Total Nov. 1, 1929..... | 41,119,812 |

## Deadlock on Six-Hour Day

Chicago—Chairmen of the "big four" railroad brotherhoods and switchmen's union, meeting here on a 6-hour day, failed to reach a vote. A reported deadlock has occurred over the 6-hour day as well as unemployment relief and a higher scale of pay contingent upon 6-hour demand.

# Railroads

**Car Orders Lacking, Inquiries Few—Wabash Seeks 11,000 Tons Rails—Rail Orders Light**

**TRACK MATERIAL PRICES, PAGE 79**

**Chicago**—Wabash railroad is inquiring for 10,000 to 11,000 tons of rails, a tonnage nearly equivalent to last year's order. Another western road released 2000 tons of rails against its 1930 contract. Orders for light rails from coal mining interests have gained slightly. Shipping orders for rails are not sufficient to increase western mill operations from the recent 30 per cent rate. Track fastenings sales during the week totaled about 1500 tons. Steel material is being assembled for the 500 Chicago Great Western cars being built by Pullman Car & Mfg. Corp.

**New York**—Little fresh car inquiry has developed and awards are scattered. Locomotive demand also is dull. Recent rail buying includes 11,000 tons for the local board of transportation, awarded to Bethlehem Steel Co.

At present approximately 2500 domestic freight cars are actively pending. Pacific Fruit Express will build 600 refrigerator cars in its own shops. Underframes for these were divided equally between Pacific Car & Foundry Co. and Western Steel & Pipe Co.

**Philadelphia**—Pennsylvania railroad has placed preliminary commitments with Pittsburgh mills for about 20,000 tons of plates, shapes and bars for 1500 new gondolas.

This road opened bids Nov. 18 on 42,000 tons of plates, shapes and bars, on which mills quoted 1.60c, nearest point on Pennsylvania tracks or equivalent.

**Pittsburgh**—New inquiry for track material and freight cars is lacking. Current activity is confined mostly to small lot specifications, tonnage involved showing little change from that of the past month. Pending business is light.

**Seattle**—Northern Pacific railway has ordered 1100 tons of tie plates from Pacific Coast Steel Corp., Seattle.

**Birmingham, Ala.**—Rail tonnage booked does not warrant rail mill resumption. Car orders also are limited.

## Car Orders Placed

Chicago & North Western, 100 trap cars and four flat cars, nearing construction in own shops.

Pacific Fruit Express, 600 refrigerator cars to own shops; underframes divided equally between Pacific Car & Foundry Co. and Western Pipe & Steel Co., both of San Francisco.

## Locomotives Placed

Chicago, Burlington & Quincy, 20 switching locomotives, nearing completion in own shops in Denver.

**Rail Orders Placed**

Board of transportation, New York, 11,000 tons, to Bethlehem Steel Co., Bethlehem Pa.

## Car Orders Pending

Denver & Rio Grande, two diners.

Neville Chemical Co., Pittsburgh, five 10,000-gallon tank cars.

Standard Oil Co. of New Jersey, three 6000-gallon and three 3000-gallon tank cars.

## Locomotives Pending

Virginian, 10 locomotive tenders.

**Rail Inquiries Pending**

Wabash railroad, 10,000 to 11,000 tons.

## Tin Plate Sales More Active for First Half

**Tin Plate Prices, Page 79**

**Pittsburgh**—Little change in the tin plate market is looked for until next month. Specifications maintain operations of about 45 per cent, with demand mainly of a miscellaneous nature. Contracting for the first half of 1931 is slightly more active, some producers reporting the majority of consumers have signed for their requirements for that period. The market continues $5, Pittsburgh, per base box.

**New York**—While some of the largest consumers continue to hold off, a fairly good tonnage of tin plate is being bought for first half at $5 per base box, Pittsburgh.

## Carnegie Set Example

"In times of depression and quietness of trade I used to prepare for the better times which never failed to come," is a quotation from Andrew Carnegie being broadcast by William Blake Patterson, president and treasurer, Patterson Tool & Supply Co., Dayton, O.

# Structural Shapes

**Awards Lower—7800-Ton Ohio River Bridge Leads—Inquiry List Is Expanded—New York Apartments, Roadways, Etc., to Aggregate Well—Bids Firmer**

**STRUCTURAL SHAPE PRICES, PAGE 79**

**New York**—Pending subway, bridge and engineering tonnage is heavy but awards are lower. Three more apartments for Bing & Bing, 3000 tons, are up. Another apartment, 1700 tons, is out for figures. Efforts to strengthen shape prices are handicapped by continued low figures on fabricated and erected material. Awards are lower. Bids go in this week on a large tonnage, including 15,000 tons for the third section of the West Side elevated highway. Auburn prison buildings and New York State bridges will take 2000 tons.

**Boston**—Structural awards are slow. Three pending jobs aggregate about 700 tons, including the Arlington, Mass., high school, 438 tons.

**Worcester, Mass.**—Structural awards were negligible last week. The one large item pending, 540 tons, for a tuberculosis hospital may be delayed until spring.

**Philadelphia**—Shape demand is small although structural projects are more numerous. Eastern shape mills operate about 50 per cent. Plain standard shapes continue 1.60c to 1.70c, eastern mill. Some fabricators have been advised old low prices will be withdrawn about the middle of December. Pennsylvania railroad placed 20,000 tons of shapes, plates and bars and opened bids on 42,000 tons more.

**Pittsburgh**—Inquiry for fabricated structural steel is slightly more active. Public work continues to predominate but few large projects are included. Local awards are small. The market on plain material shows a steadier tone at 1.60c, Pittsburgh.

**Buffalo**—Engineers have completed preliminary specifications for Grand Island bridges over the Niagara river to take 12,000 tons of structural steel. A large tonnage of sheet piling also will be purchased.

A total of 29 bids was received for the new Lackawanna viaduct over half a dozen railroads. Award is deferred pending tabulations. The successful bidder will buy 2100 tons of structural steel as well as concrete bars. Work must begin within ten days of the award.

**Cleveland**—Local structural awards continue at low ebb. A fair degree of activity is maintained in Toledo, O., and Detroit territories. General contract on John Marshall high school went to Crowell & Little Construction Co. Two more high schools, 300 to 500 tons each, will come up soon. Main street high level bridge, on which a bond issue was favorably voted Nov. 11 may not reach contract stage for two years. Delay too will be encountered on the $1,850,000 juvenile court and welfare building for which a bond issue also was authorized. Fabricators report a stiffening in price on material fabricated and erected in harmony with recent mill announcements of a 1.60c, Pittsburgh, minimum. This results in some bidding around $85 a ton, which a short time ago would have gone for less.

**Chicago**—Accumulated specifications, plus material ordered out by a freight car builder for 500 Chicago Great Western cars, have resulted in more than 25 per cent gains in releases to the structural mills. Nearly 10,000 tons of structural steel was awarded, including highway bridge work in Iowa. Plain material is quoted 1.70c, mills.

**Birmingham, Ala.**—Individual structural awards usually involve less than 100 tons at a time. Five-day weeks are being maintained. Southern Steel Works Co. has several small jobs including 120 tons for a Y. M. C. A. building in New Orleans.

## Contracts Placed

7800 tons, bridge over Ohio river at Evansville, Ind., 5000 tons, main spans, to American Bridge Co., Pittsburgh, and 2800 tons, approaches, to McClintic-Marshall Co., Pittsburgh.

3800 tons, 35-story apartment-hotel, 150 Central park south, New York, to unstated fabricator; H. K. Ferguson Co., Cleveland, general contractor.

2420 tons, Wendell Phillips high school, Chicago, to New City Iron Works, Chicago.

1700 tons, 18-story apartment, Riverside drive and Ninety-fifth street, New York, to Harris Structural Steel Co., New York; Charles Lench, architect; Ralph Ciluzzi, builder.

1400 tons, highway bridge over Mississippi river at Lansing, Iowa, to McClintic-Marshall Co., Chicago.

1350 tons, apartment, 400 East Fifty-second street, New York, to Lehigh Structural Steel Co., Allentown, Pa.; listed last week as going to unstated fabricator.

1200 tons, bar gratings and plate work, cell block, prison, Attica, N. Y., to Globe Iron Works, Bronx, N. Y.

950 tons, public school No. 150, Forty-third avenue from Fortieth to Forty-first streets, Sunnyside, Long Island City, Queens, N. Y., to Easton Structural Steel Co., Easton, Pa.; Silvestri Bros., general contractors.

750 tons, theater and hotel building, Davenport, Iowa, to Rock Island Bridge & Iron Works, Rock Island, Ill.

720 tons, viaduct and station, Illinois Central railroad, Randolph street, Chicago, to American Bridge Co., Pittsburgh.

650 tons, 13-story Medical Chambers building, 138-44 East Fifty-fourth street, New York, to Lehigh Structural Steel Co., New York; Turner Construction Co., general contractor.

600 tons, theater and stores, Torrington, Conn., to McClintic-Marshall Co., Pittsburgh; G. A. Zimmerman Corp., New York, general contractor; Thomas Lamb, architect.

600 tons, apartment, Seventh avenue and Fifteenth street, New York, to Levering & Garrigues Co., New York; Henry Mandel interests, builders.

600 tons, Engineer's building, University of California, Berkeley, Calif., to Pacific Coast Engineering Co., Oakland, Calif.

500 tons, public school No. 35, Ninetieth avenue from 191st street to 192nd street, Hollis, Queens, N. Y., to Easton Structural Steel Co., Easton, Pa.; Goete Construction Co., general contractor.

450 tons, bridges, Erie railroad, Hackensack, N. J., to Phoenix Bridge Co., Phoenixville, Pa.

430 tons, shapes and iron work, Holy Family church, Union City, N. J., to F. G. Schaefer Iron Works, Edgewater, N. J.

400 tons, Bloom township high school, Chicago Heights, Ill., to A. F. Anderson Iron Works, Chicago.

370 tons, 4-story office and store building, Broadway and West Eighty-fourth street, New York, to Prudential Iron Works, Bronx, N. Y. Godfrey M. Weinstein, contractor;

360 tons, grade crossing elimination, Midler avenue, Syracuse, N. Y., to Bethlehem Steel Co., Bethlehem, Pa.; Walsh Construction Co., general contractor.

337 tons, crest gate guides, hydro-electric project, Rock Island, Wash., to Pacific Car & Foundry Co., Seattle; Stone & Webster Inc., builder.

325 tons, two buildings, Paragon Refining Co., Toledo, O., for Gulf Refining Co., Pittsburgh, to McClintic-Marshall Co., Pittsburgh.

300 tons, 6-story apartment, 2337 Ocean avenue, Brooklyn, N. Y., to Gaynor & Rosenblum, Brooklyn.

280 tons, highway bridge, Palmer av-

## Awards Compared

| | Tons |
|---|---|
| Awards this week | 29,042 |
| Awards last week | 30,128 |
| Awards two weeks ago | 38,599 |
| Awards this week in 1929 | 52,792 |
| Av. weekly awards, 1930 | 35,709 |
| Av. weekly awards, 1929 | 42,213 |
| Av. weekly awards, Oct. | 37,575 |
| Tot. awards to date, 1929 | 1,971,006 |
| Tot. awards to date, 1930 | 1,678,350 |

enue, Yonkers, N. Y., to McClintic-Marshall Co., Pittsburgh.

230 tons, Abbott dairy building, Philadelphia, to Robinson Iron & Steel Co., Philadelphia; Turner Construction Co., general contractor.

200 tons, isolation pavillion, Rutland road, Brooklyn, N. Y., to Kues Bros. Iron Works, Bronx, N. Y.; J. Weinstein, general contractor.

200 tons, Paramount theater, Aurora, Ill., to Gage Structural Steel Co., Chicago.

190 tons, 6-story apartment, 2765 Ocean avenue, Brooklyn, N. Y., to Garnor & Rosenblum, Brooklyn.

180 tons, Grant school addition, Bellvue, Pa., to John Eichleay Jr. Co., Pittsburgh.

150 tons, apartment, Woodmere, N. Y., to Dreier Iron Works, Bronx, N. Y. Sugarman & Berger, architects.

150 tons, bridge, Baltimore & Ohio railroad, Hays, Pa., to Fort Pitt Bridge Works Co., Pittsburgh.

150 tons, 6-story apartment, Sixty-fifth road, Long Island City, N. Y., to J. Klein Iron Works, Astoria, Brooklyn, N. Y.

150 tons, 6-story apartment, 757 Empire boulevard, Brooklyn, N. Y., to Stanley Iron Works, Brooklyn.

150 tons, bank and office building, Broad and Chew streets, Philadelphia, to Kalman Steel Co., Chicago.

130 tons, 6-story apartment, Twenty-eighth avenue and Thirty-third street, Long Island City, N. Y., to Claremont Iron Works, Bronx, N. Y.

120 tons, Y. M. C. A. building, New Orleans, to Southern Steel Works Co., Birmingham, Ala.

100 tons, stores and offices, East Tremont avenue, Bronx, N. Y., to Cosmic Iron Works, Bronx.

## Contracts Pending

15,000 to 20,000 tons, viaduct and plaza, Pennsylvania railroad, West Philadelphia, Pa.; bids Nov. 28.

12,000 tons, Grand Island bridges, Buffalo; specifications available about Dec. 15; bids about Jan. 1.

7500 tons, Olympic club, San Francisco; bids Nov. 17.

5000 tons, office building, House of Representatives, Washington; McCloskey & Co., Philadelphia, and Consolidated Engineering Co., Baltimore, low bidders.

4000 tons, warehouse, Hawaiian Pineapple Co., Honolulu; bids rejected.

1700 tons, apartment, 850 Fifth avenue, New York.

1418 tons, six lots of bridge work, Louisiana highway commission; 518 tons in Allen parish, 248 tons in Catahoula parish, 240 tons, Tensas parish, 153 tons in Jefferson parish, 138 tons in Beauregard parish, and 121 tons in Franklin parish.

1100 tons, bridge work for Chicago, Milwaukee, St. Paul & Pacific railroad.

1000 tons, highway bridges, New York.

1000 tons, cell block and other buildings, Auburn prison, N. Y.

800 tons, Philadelphia general hospital building, Philadelphia; general contract to Wark Co.

800 tons, John Marshall high school, Cleveland; general contract to Crowell & Little Construction Co., Cleveland, at $643,483.

800 tons, shop building, Bronx yards, board of transportation, New York.

787 tons, Polga river bridge, Butte county, Calif.; bids Dec. 3.

750 tons, Illinois-Indiana highway bridge at Mt. Carmel, Ill.; bids Dec. 9.

700 tons, Masonic temple, Collingswood, N. J.; general contract to F. V. Warren.

600 tons, subway in Chicago, for Chicago & North Western railroad.

521 tons, First street bridge, San Diego, Calif.; bids Dec. 1.

438 tons, high school, Arlington, Mass.

400 tons, James Ford Rhodes junior-senior high school, South Brooklyn, Cleveland; bids open Dec. 15.

400 tons, South high school, Cleveland; bids Dec. 22.

400 tons, highway bridges, Maryland.

350 tons, county-state highway bridge, Painesville, O.; bids close Nov. 18.

300 tons, plate girders for Western Pacific Co., San Francisco; bids in.

190 tons, grade elimination, Portageville, N. Y.; general contract to Bates & Rogers Construction Co., Cleveland.

140 tons, bank building alterations, Augusta, Me.

130 tons, coast guard unit, New London, Conn.

105 tons, postoffice, Pawtucket, R. I., steel bids being taken.

# Concrete Bars

**Lettings Seasonally High, Topped by 1700-Ton Plant in Seattle, 1100-Ton Subway in New York—5000 Tons for Buffalo Bridges Up for Bids Early Next Year**

REINFORCING BAR PRICES, PAGE 79

**New York**—Concrete reinforcing bar prices are fairly firm on a basis of 1.70c, Pittsburgh. New York delivered prices are influenced by firm attitude taken by mills. Few instances of shading are noted, but concessions based on the claim closing figures were in before Oct. 1, when the market firmed up, are fewer. Awards are seasonally large. A heavy volume of work is up for figures, considerable being due for early closing. Bar for the Plainfield, N. J., trunk sewer went to Igoe Bros. Awards continue to run slightly ahead of last year. Bids will be taken for the Port Authority inland freight terminal within the next few weeks involving several thousand tons, although plans are not yet complete.

**Boston**—Small jobs alone are noted in the concrete bar market. The aggregate for last week is less than 200 tons. Two or three larger lots are pending and are expected to be let within a few days. Competition still is keen and prices show little tendency toward firmness.

**Buffalo**—Plans for the Grand Island bridges on which bids are to be taken about Jan. 1 show 5000 tons of reinforcing bars will be purchased. Preliminary estimates were considerably less.

**Pittsburgh**—Concrete bar tonnage continues to moderate seasonally. Activity still is fair for this period but lighter than a month ago. Awards are quiet, involving few large lots and both inquiry and orders for this district take small tonnages. Prices are unchanged.

**Chicago**—Billet and rail steel reinforcing bars are variable in price and some fabricators have no published quotations outstanding. Inquiries have fallen off, while awards are fair. Shipments are being made on a few bridge jobs. About 500 tons was closed in small lots last week.

**Birmingham, Ala.**—Concrete bar dealers manifest interest and considerable tonnage is being delivered to them. Operations, however, are less than 60 per cent. Various construction plans are being speeded so that prospects for increased bookings are bright.

## Awards Compared

| | Tons |
|---|---|
| **Awards this week** | **6,505** |
| **Awards last week** | **4,582** |
| **Awards two weeks ago** | **8,211** |
| **Awards this week in 1929** | **2,115** |
| **Av. weekly awards, 1929** | **5,849** |
| **Av. weekly awards, 1930** | **7,064** |
| **Average weekly awards Oct.** | **8,612** |
| **Total awards to date, 1929** | **283,149** |
| **Total awards to date, 1930** | **332,022** |

## Contracts Placed

1700 tons, city light building, Seattle, to Northwest Steel Rolling Mills, Seattle.

1100 tons, subway, route 108, section 6, Queens, N. Y., to McClintic-Marshall Co., Pittsburgh; George H. Flinn Corp., New York; general contractor.

800 tons, United States marine barracks, Quantico, Va., to unstated fabricator; Ralph Sollitt & Sons Construction Co., Chicago, general contractor.

500 tons, reinforcing steel including metal lath, channels, angles and lath accessories, Waldorf-Astoria hotel, New York, to Consolidated Expanded Metal Co., New York.

400 tons, reinforcing mesh, Lehigh

(*Concluded on Page* 87)

# Strip

**Further Decline in Buying and Production — Prices Show Weakness—Needs Grow Less**

STRIP PRICES, PAGE 79

**Youngstown, O.**—Strip consumers now are seeking to cover first quarter needs for next year. Mills here are being importuned to protect customers, mostly for first quarter but in some cases through the second quarter also. In this connection, buyers are suggesting present prices for first quarter as likely to prove satisfactory under present conditions, while others seeking the longer coverage express willingness to raise the price 10 to 20 cents in anticipation of a possible advance in general steel prices.

To all such customer advances to ascertain early 1931 coverage, mills in this district so far have returned the same answer, that they are not as much interested in next year's business as in delivery over the remainder of this year. So far no local mill has taken or shown a disposition to take any 1931 business.

**New York**—Hot-rolled strip is easy at 1.60c to 1.70c, Pittsburgh, for the wide and narrow groups. Too little business is being done to afford a test of 2.35c, Pittsburgh, for cold-rolled strip.

**Philadelphia**—Demand for strip steel is somewhat smaller with prices unchanged from the level of several weeks.

**Pittsburgh**—Strip business and operations show a further decline. A slightly easier tone also is noted in prices. Representative buyers still are paying 1.70c and 1.60c for hot material but some tonnage is going in some districts at $1 a ton less. Cold-rolled strip is steady at 2.35c to 2.45c. Requirements of most consumers have declined this month, with automotive tonnage confined entirely to small lots for prompt requirements. Mill operations are lower at 30 per cent for hot mills and 20 to 25 per cent for cold mills.

**Cleveland**—Improved operating conditions among a few automotive customers are largely responsible for fairly well sustained demand for hot and cold strip steel. This is far from the level of a year ago but no worse than it has been in recent weeks, in some cases being 40 to 50 per cent of what is considered normal for this period. Diversified demand for small tonnages is helping the local cold strip producer. It maintains 2.35c, Cleveland. Hot is held at 1.60c and 1.70c, Pittsburgh, for wide and narrow, respectively, although some large buyers have been able to uncover concessions from those levels in the Michigan markets.

## Warehouse Sales Lacking Encouraging Features

Warehouse Prices, Page 101

**New York**—Jobbing demand is continuing to hold its own, with prospects of no material improvement until after Jan. 1. Jobbers look for a moderate recession as holiday and inventory season approaches. Prices are fairly steady, with little outstanding tonnage to afford test.

**Boston**—Another week of quiet business is reported by warehouse interests. Small lots being ordered, maintain scheduled prices.

**Philadelphia** — Jobbers report bookings even further decreased and current sales are now about 55 per cent of last year's average.

**Pittsburgh**—Business has moderated slightly so far this month. Heavy products have declined more in activity than flat-rolled material. Prices are quotably unchanged although occasional concessions are noted in sheets.

**Buffalo**—November shows some improvement over October in a few products from stock, but as a whole the total volume shows little change. Warehouse men look for restricted buying until Jan. 1.

**Cincinnati**—Slightly heavier individual orders are reported by jobbers who offer no predictions whether the upturn will hold. Prices are steady.

**Chicago**—Warehouse sales are making little gain and remain under the October rate. Diversification of buying is reported, although hot-rolled bar products continue to lead. Prices are unchanged.

**St. Louis**—Jobbing activity in iron and steel in this district still runs much below the usual seasonal volume. Large consumers have not increased their buying. There has been some quickening in the purchasing of materials for light repair work. Items in the building material category show little change. Sheets have shown no improvement from the quiet status of the past few weeks. Structural shapes, beams, and bars are slow. Wire and wire products generally continue to lag.

**Cleveland**—Mediocre volume of sales which has been representative of jobber activity the past three months continues unimproved. Warehouse interests report little opposition to the prevailing price schedule, with quotations holding.

## Operations Again Ease Except Cleveland, Valley

**Youngstown, O.**—Empire and Sharon Steel Hoop operations increase activity here two points this week to 52 per cent of capacity, compared with 55 per cent for the corresponding period of 1929. Empire's Falcon sheet mill resumed after several weeks' idleness. Sharon operates at 60, against last week's 50 per cent. Carnegie and Newton are unchanged at 50 as is Republic at 55.

District sheet output is approximately 37 per cent of capacity, though mill schedules are staggered and full-week operations are difficult to determine.

**Buffalo**—Another drop in the district steel operating rate is shown this week, with 46 per cent of the total number of open-hearth units now making steel, compared with 48 per cent last week and an October average of 54 per cent. Producers think a rate about equal to that now prevailing will continue until the holidays.

**Pittsburg**—Ingot production is off slightly [illegible] closer to 45 per cent compared with 4[illegible] to 50 recently. Sheet and tin plate production is unchanged at 40-45 and 45, respectively. Strip schedules are lower at 30 with pipe off at 45 to 50.

**Cleveland**—From the low of 21 per cent capacity the first week of November, steelmaking shows the third successive weekly gain with 15 open hearths on at a 44 per cent capacity rate. This compares with last week's 35 per cent. Corrigan, McKinney has six, Otis five, to lead the independents.

**Chicago**—Open-hearth output is down about two points to 45 per cent for the district. Active steelworks blast furnaces number 14 out of 36. Plate mills have gained a few points, while sheet mills are down slightly to a 40-50 per cent rate.

**Birmingham, Ala.**—Slight reduction in steel operations are reported, 43 per cent being the current rate, against 45 last week. Ingot production is limited to nine open-hearth furnaces. Nine other furnaces are in shape for immediate resumption.

## Concrete Awards

(*Concluded from Page* 83)

valley, warehouse, Eleventh avenue, between Twenty-sixth and Twenty-seventh streets, New York, to Consolidated Expanded Metal Co., Wheeling, W. Va.; Starrett Bros. & Eken Inc., general contractors.

350 tons, apartment, Sunset boulevard near Kings road, Los Angeles, to unstated interest.

268 tons, hospital, Stockton, Calif., to W. C. Hauck & Co., San Francisco.

250 tons, reinforcing mesh, Lehigh St. Louis County Water Co., St. Louis, to Laclede Steel Co., St. Louis.

230 tons, trunk sewer Plainfield, N. J., to Igoe Bros., Newark, N. J.

200 tons, Randolph street viaduct and Illinois Central suburban station, Chicago, to Concrete Steel Co., New York.

200 tons, estimated, theater on Sixty-third street, Chicago, to Concrete Engineering Co., Chicago; listed last week as going to unstated fabricator.

142 tons, highway, county road 84, Mt. Vernon-North Pelham, Westchester county, N. Y., to Truscon Steel Co., Youngstown, O.

135 tons, bridge, over Sprain Brook, Yonkers, Westchester county, N. Y., to Concrete Steel Co., New York.

125 tons, tank foundations, Texas Corp., Portland, Me., to Kalman Steel Co., Chicago.

105 tons, undercrossing, Saw Mill river parkway, Pleasantville, Westchester county, N. Y., to Truscon Steel Co., Youngstown, O.; P. Luciano & Son Inc., general contractor.

100 tons, bath houses, Brighton beach, Brooklyn, N. Y., to Igoe Bros., Newark, N. J.

100 tons, Masonic temple, Dubuque, Iowa, to Concrete Steel Co., Chicago.

## Contra

5000 tons, Grand island bridges, Buffalo; bids about Jan. 1.

520 tons, Film office building, Forty-third street, New York.

400 tons, bridge over Isthmus inlet, Coquille, Oreg.; bids Dec. 8.

## Manufacturing States Rank High in Agriculture

New York and Pennsylvania rank eleventh and thirteenth, respectively, as agricultural states, despite the fact that both are popularly regarded as manufacturing states. On the basis of the value of farm products per square mile, both of these states outrank the undoubtedly agricultural state of Texas.

These are among the facts disclosed by recent investigations of the National Industrial Conference board. Taking the latest available statistics, the board finds that the three industries of agriculture, mining and manufacture, which are the basic elements in our economic system, produced over $48,500,000,000, or more than three-fifths of the total estimated net production of goods and services, in 1927. Farm products contributed 33.1 per cent, or $16,050,362,000. The contribution of manufacturing in terms of value added to raw materials was 56.8 per cent, and the production of minerals, 10.1 per cent.

"Although it is an accepted fact," says the board, "that this country has become predominantly a manufacturing nation, agriculture contributed more than 50 per cent of the wealth produced in 19 states. In six additional states, Kentucky, Oklahoma, Wyoming, Arizona, Utah and Nevada, the combined value of crops and animal products exceeded the value added by manufacture. For the larger part of the area of the United States it is evident, therefore, that agriculture is still the chief source of income."

Iowa and Texas with totals of over $1,000,000,000 each, led all other states in combined value of agricultural products.

## Yearbook Gives Steel Data

Washington—The 1930 Commerce Yearbook, compiled by the department of commerce and now available for distribution through the government printing office, gives the following data concerning the iron and steel industry for 1927, the latest year for which such information is available.

Number of establishments, 486; average wage earners for the year, 361,312; horsepower utilized 5,234,065; wages paid, $601,275,000; cost of materials, fuel and power, $1,689,655,000; value of products, $2,779,814,000; value added by manufacture, $1,090,185,000.

# Pipe

**Eastern Inquiry Better—Detroit Buys 3500 Tons of Cast—New York Central Opens Bids**

**PIPE PRICES, PAGE 101**

**New York**—Cast pipe prices are firm and unchanged, $36 to $37, base, eastern foundry. Volume is not large, although inquiry is heavier. Brooklyn Union Gas Co. may purchase a fair tonnage. A Westchester county trunk sewer project will need several hundred tons of 54-inch. Bids are in on pipe for Brentwood, N. Y., and Newton, N. J., about 500 tons. The West Orange, N. J., sewer project will be of reinforced concrete construction. New York is preparing its schedule of early 1931 needs, but will not buy before January.

New York Central railroad has opened bids on approximately 6000 tons of 12¾-inch steel pipe for development work along the west side of Manhattan.

**Boston**—Pipe conditions show little change. Contracts placed call for single carloads. Prices are firm.

**Buffalo**—This city plans emergency legislation to raise $480,000 to purchase pipe and lay water mains in a large extension program. The tonnage will be one of the largest purchased in this district in a long time.

**Pittsburgh**—Little activity is noted in tubular products. Demand for standard pipe is off slightly since a month ago and oil country goods are in poor demand. New business continues lacking in line pipe although negotiations are under way for prospective work in the near future. Columbia Gas & Electric Corp. plans an extension of its eastern pipe line system to various seaboard cities. Demand for locomotive and boiler tubes and mechanical tubing is quiet and unchanged. Pipe mill operations are off slightly at 40 to 50 per cent.

**Chicago**—Poor marketing of improvement bonds still affects contract cast pipe work in Illinois, although in other states of the North Central markets contract work is more active. Larger diameters of cast pipe are quoted $45.20 to $46.20, delivered Chicago, for contract work, but are not being given a severe test for public lettings. Detroit closed on 3500 tons of 24 and 36-inch.

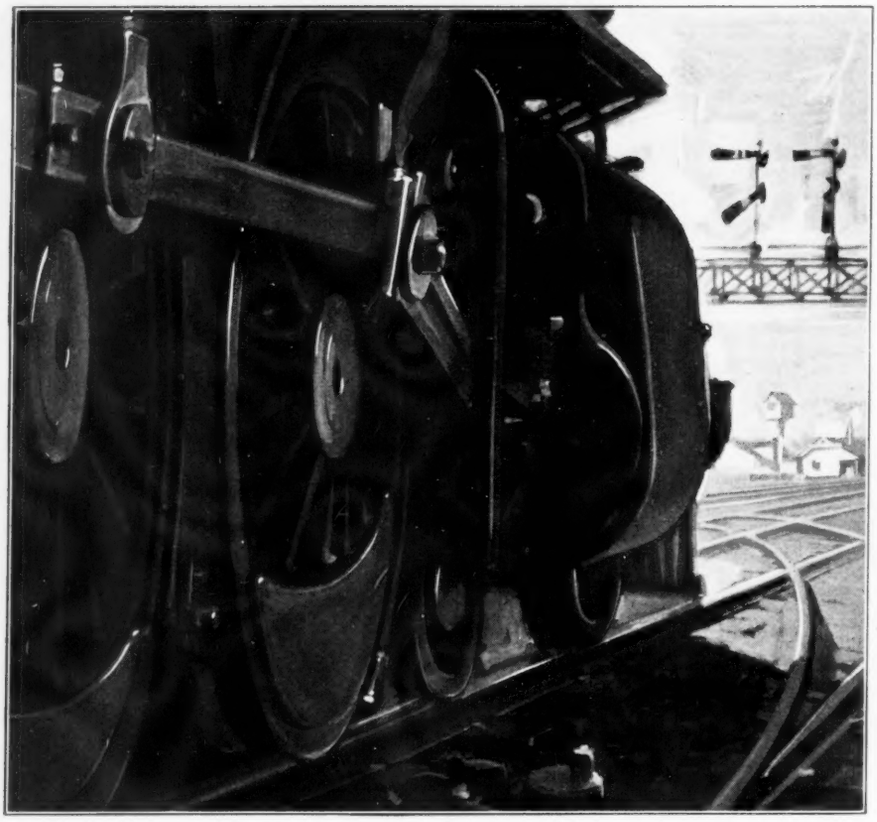
**Milwaukee**—An order for 145 miles of large diameter steel pipe from Texas Construction Co. for a natural gas line in Louisiana will make it necessary for A. O. Smith Corp. to resume operations at its No. 2 pipe mill, down for a number of weeks.

**Birmingham, Ala.**—Seasonal quietness is setting in with pressure pipe producers. Base prices, $37 to $38, foundry, on 6-inch and larger, remain firm. Shipments against old contracts remain active. New lettings are less numerous and total tonnages are disappointing.

## Contracts Placed

3500 tons, 24 and 36-inch cast pipe for Detroit, 2000 tons 24-inch divided equally between Lynchburg Foundry Co., Lynchburg, Va., and Glamorgan Pipe & Foundry Co., Lynchburg, and 1500 tons to United States Pipe &

# A Million Miles on AGATHON



SMOOTHLY, silently—rolling on bearings of Agathon Alloy steel, a certain celebrated train has run the equivalent of forty trips around the world—and still no need of replacing the bearings. • Strength, hardness and an uncanny resistance to wear and strain—qualities that make Agathon ideal for bearings—make it profitable in other fields as well. • Agathon Alloy Steels are stronger than other steels of equal weight. They stand up better against torsional strains and severe impact. • Machinery manufacturers—builders of motor cars, trucks, tractors and airplanes—are already using Agathon to cut maintenance costs and give longer service. • Agathon Alloys can be used profitably in hundreds of places where stresses and strains are too severe for ordinary steels. • Extensive research facilities, backed by the world's greatest capacity for the production of alloy steels, are at your service. Republic metallurgists will tell you frankly whether Agathon will meet your requirements. No obligation is incurred. Simply write us on your business letterhead and a meeting will be arranged—and a copy of our handbook on Agathon Alloy Steels will be mailed you promptly.

AGATHON STEELS

*Central Alloy Division*

**REPUBLIC STEEL CORPORATION**

GENERAL OFFICES: YOUNGSTOWN, OHIO

Foundry Co., East Burlington, N. J.; all under $45, delivered.

105 tons, 4 to 8-inch class B cast pipe for Anaheim, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, 16-inch class 150 cast pipe for Eureka, Calif., to United States Pipe & Foundry Co., East Burlington, N. J.

100 tons, 20-inch cast iron pipe for Rahway, N. J., to United States Pipe & Foundry Co., East Burlington, N. J.

**Steel Pipe Orders**

600 tons, 30-inch steel pipe line for Tacoma, Wash., to Birchfield Boiler Works, Tacoma.

Unstated tonnage, 145 miles large diameter steel pipe, Texas Construction Co. subsidiary, Electric Bond & Share Corp., for a natural gas line in Louisiana, to A. O. Smith Corp., Milwaukee.

Unstated tonnage 323 lengths steel pipe for United States engineers, New Orleans, to Harry Bros. Co. of Louisiana, New Orleans.

## Contracts Pending

1600 tons, 6 to 12-inch cast pipe for Philadelphia; bids taken Nov. 19; also 100 fire hydrants.

Unstated tonnage, 54-inch cast iron pipe for trunk line sewer, Yonkers-Chappaqua, N. Y., for Westchester County sanitary commission; bids in.

**Steel Pipe Pending**

6000 tons, approximately, 12¾-inch steel pipe for development work in New York city for New York Central railroad; bids opened.

## Semifinished Steel Demand Slower Than Month Ago

**Semifinished Prices, Page 90**

**Pittsburgh**—Shipments of semifinished steel continue less active than a month ago and new business also has moderated slightly. Orders are confined entirely to small lots. Producers continue to quote $31 for rerolling billets, slabs and sheet bars, and $36 for forging billets and wire rods.

**Cleveland**—The leading merchant producer here has increased the number of its active open hearths from three to six, of its 14 units, to catch up on orders. The general market is unchanged. Sheet bars, billets and slabs are being shipped at $31, base, Cleveland and Youngstown, O.

**Philadelphia**—Billet sales are small and prices are steady.

**Youngstown, O.**—Occasional purchases of semifinished steel are made by nonintegrated sheet and strip mills. Billets, sheet bars and slabs continue to bring $31, Youngstown and Pittsburgh.

Standard Electric Time Co., Springfield, Mass., finds business close to the 1929 rate. August business was the largest of any month in the company's history.

# Wire

**Little Change in Demand, Some Gains Appearing—Nails Continue Weak—Jobbers Active**

**WIRE PRICES, PAGE 79**

**Chicago**—Plans are being made for heavier wire products demand shortly after the first of the year. In the Duluth district arrangements have been made for a small increase in production early next year for expected improvement in spring trade. Jobber buying constitutes most of the business, with dealer sales off. Merchant orders are equivalent to those of October. Nail prices are variable as restricted buying hardly offers a test.

**Worcester, Mass.**—Hand-to-mouth buying prevailing in the wire market for several months continues. Automobile accessory requirements have tapered. There is little expectation that fourth quarter shipments will show any change from third quarter. Manufacturers are looking to the automobile after the turn of the year for an advance in the market. Plain bright wire to dealers is quoted 2.40c base, Worcester.

**New York**—While some small business continues to be booked at $2, Pittsburgh, the nail market is generally $1.90 to $1.95, Pittsburgh. Sellers report that demand is on a parity with the rate in October, which, in turn, was substantially better than in September. Trading, however, is far from brisk. Plain bright wire is 2.30c, Pittsburgh, with demand moderate.

**Pittsburgh**—Wire business is off slightly since the first of the month with little change in shipments. The market remains unsettled on nails with $1.90 and $1.95 now representative of going tonnage. Plain wire still is quoted 2.30c, although some concessions continue to be noted. Wire rods remain $36. Demand from the automotive industry is fairly steady but lacks improvement, while requirements of other industrial consumers are off slightly since a month ago.

**Cleveland** — Jobbers have increased wire nail specifications during the past week or two. Nut, bolt, rivet and screw manufacturers and other consumers of manufacturers' wire, however, do not expect to be able measurably to increase their tonnage acceptances until the new year. Plain wire is 2.20c to 2.30c, Cleveland, and wire nails $1.90 to $2.00, Cleveland.

Kerner Incinerator Co., Milwaukee, manufacturer of flue-fed incinerators, has moved into its new plant at 3707 North Richards street, the fifth enlargement in 20 years.

## Nut, Bolt, Rivet Demand Fails To Improve

**Bolts, Nuts, Rivets Prices, Page 79**

**Pittsburgh**—Demand for bolts, nuts and rivets is quiet with no improvement over activity of the past month. Railroad buying shows no increase although some pickup normally is expected at this time. Prices are steady at 73 off for bolts and nuts and 2.75c, Pittsburgh, for large rivets. Operations are about 40 per cent.

**New York**—Trading in bolts and nuts continues slack with prices unchanged at 73 off and operations around 40 to 45 per cent. Bids were taken Nov. 17 on first quarter requirements of bolts, nuts, spikes and other hardware by the New York departments of docks, plants and structures and the fire department. Additional material will also be purchased for fourth quarter needs for the fire department. Close to 75 tons of material are needed.

**Philadelphia**—Rivet demand is slightly improved, with boiler rivets firm at 2.75c, Pittsburgh, and somewhat lower being done on structural rivets.

**Cleveland**—Orders for nuts, bolts and rivets continue small, all consumers keeping low stocks. Operations vary between 30 and 50 per cent.

**Chicago**—Discounts for bolts and nuts are 64 to 73 off. Small rivets remain unchanged at 70 to 70, 10 and 5 off, while large structural rivets in carload lots are 2.85c, Chicago. Producer operations remain at about 40 per cent. Specifications remain slightly under October.

## May Raise Duty on Iron

Washington—The industrial investigation committee of Japan has recommended an increase in the duties on pig iron, for which a bill will be introduced at the next session of the Japanese diet in January, according to a cablegram to the department of commerce from Commercial Attache Butts, at Tokyo.

# Raw Material Prices

## Pig Iron

**Per Gross Ton**

**FOUNDRY, NO. 2**

| | |
|---|---|
| Chicago, furnace | $17.50 |
| Pittsburgh, district fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Valley, furnace | 17.00 |
| Cleveland fur., local del. | 17.50 |
| Philadelphia, delivered | 18.76 to 19.76 |
| Virginia, furnace | 17.75 |
| Granite City, Ill., fur. | 17.50 |
| Buffalo, fur., local del. | 17.50 |
| Buffalo, del. Boston | 21.41 to 21.91 |
| Buff., all-rail, Brooklyn | 20.41 to 20.91 |
| Buff., all-rail, Newark | 18.78 to 19.28 |
| Ala., Bir. fur., local del. | 14.00 |
| Alabama, del. Chicago | 17.51 |
| Alabama, del. St. Louis | 16.42 |
| Alabama, del. Cincinnati | 15.19 to 16.19 |
| Alabama, del. Cleveland | 17.51 |
| Ala., Phila., dock del. | 16.75 to 17.25 |
| Ala., Balt., dock del. | 16.50 to 17.00 |
| Alabama, New York dock | 16.50 |
| Ala., Boston dock del. | 17.25 |
| Tenn., Bir. base, local del. | 14.00 |
| Tennessee, del. Cin. | 15.19 to 16.69 |
| Montreal, delivered | 23.50 |
| Toronto, delivered | 22.10 |

**FOUNDRY, NO. 2X**

| | |
|---|---|
| Buffalo, fur., local del. | 18.00 |
| Buff., all-rail, Brooklyn | 20.91 to 21.41 |
| Buffalo, all-rail Newark | 19.28 to 19.78 |
| Buffalo, del. Boston | 21.91 to 22.41 |
| Virginia furnace | 18.25 |
| Eastern, del. Phila. | 19.26 to 20.26 |

**FOUNDRY, NO. 1X**

| | |
|---|---|
| Buffalo fur., local del. | 19.00 |
| Eastern, del. Phila. | 19.76 to 20.76 |

**MALLEABLE**

| | |
|---|---|
| Chicago, furnace | 17.50 |
| Cleveland fur., local del. | 17.50 |
| Pittsburgh district fur. | 18.00 |
| Pittsburgh, delivered | 18.63 to 19.13 |
| Valley furnace | 17.50 |
| Buffalo fur., local del. | 18.00 |
| Eastern Penna., delivered | 19.26 to 20.91 |
| Granite City, Ill., fur. | 17.50 |
| Montreal, delivered | 24.00 |
| Toronto, delivered | 22.60 |

**BASIC**

| | |
|---|---|
| Pittsburgh dist. fur. | 17.50 |
| Pittsburgh, delivered | 18.13 to 18.63 |
| Eastern Penn., del. | 17.50 to 18.00 |
| Buffalo fur., local del. | 17.00 |
| Montreal, delivered | 22.50 |
| Valley furnace | 17.00 |

**BESSEMER**

| | |
|---|---|
| Valley furnace | 17.50 |
| Pittsburgh, delivered | 18.63 to 19.13 |
| Pittsburgh, furnace | 18.00 |

**LOW PHOS**

| | |
|---|---|
| Valley fur., standard | 27.00 |
| Philadelphia, standard | 24.76 to 28.79 |
| Furnace, copper-bearing | 23.00 to 23.50 |

**GRAY FORGE**

| | |
|---|---|
| Valley furnace | 16.50 |
| Pittsburgh district fur. | 17.00 |
| Pittsburgh, delivered | 17.63 to 18.13 |

**CHARCOAL**

| | |
|---|---|
| Lake Superior, del. Chicago | 27.04 |

**SILVERY**

Jackson County, O., fur., in per cents 6—$21; 7—$21.50; 8—$22; 9—$22.50; 10—$23; 11—$24; 12—$25; 13—$27.

**BESSEMER FERROSILICON**

Jackson County, O., fur., in per cents 10—$25; 11—$26; 12—$27; 13—$29; 14—$31; 15—$33; 16—$35.

## Coke

**Prices Per Net Tons**

**Beehive Ovens**

| | |
|---|---|
| Connellsville furnace | $2.50 to 2.60 |
| Connellsville foundry | 3.50 to 4.85 |
| New River foundry | 6 00 |
| Wise county foundry | 4.25 to 5.00 |
| Wise county furnace | 3.50 to 4.25 |

**By-Product Foundry**

| | |
|---|---|
| Newark, N. J., del. | $9.00 to 9.40 |
| Chicago ovens | 8.00 |
| New England, del. | 11.00 |
| St. Louis, del. | 9.00 |
| Birmingham, ovens | 5.00 |
| Indianapolis, del. | 8.25 |
| Ashland, Ky., ovens, Connell. basis. | 5.50 |
| Portsmouth, O., ovens, Connell. basis | 5.50 |
| Buffalo ovens | 8.00 to 8.50 |
| Detroit, ovens | 8.50 |
| Philadelphia, del. | 9.00 |

## Iron Ore

**LAKE SUPERIOR ORE**

**Gross Ton, 51½%, Lower Lake Ports**

| | |
|---|---|
| Old range bessemer | $4.80 |
| Mesabi bessemer | 4.65 |
| Old range nonbessemer | 4.65 |
| Mesabi nonbessemer | 4.50 |
| High phosphorus | 4.40 |

**EASTERN LOCAL ORES**

**Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces**

| | |
|---|---|
| Foundry and basic, 56-63%, contract | 10.00 |
| Copper-free low phos. 58-65% | nom. |

**FOREIGN ORE**

**Cents per units, alongside docks Atlantic ports**

| | |
|---|---|
| Foreign manganiferous ore, 45-55% iron, 6-10% manganese | 11.00 |
| North African low phosphorus | 10.00 |
| Swedish basic, 65% | 9.00 |
| Swedish low phos. | 10.00 |
| Spanish, North African basic, 50 to 60% | 9.00 |
| Newfoundland fdy., 55% | 9.00 |
| Tungsten, spot and future short ton unit, duty paid | $12.50 |
| Chrome ore, 48% net ton c.i.f. | $21.50 to 22.50 |

## Manganese Ore

Prices, not including duty, are cents per unit; cargo lots.

| | |
|---|---|
| Caucasian, 52-55% (nom.) | 27 to 28 cents |
| Indian, 48-50% (nom.) | 27 to 28 cents |
| Brazilian, 46-48% (nom.) | 25 cents |

## Refractories

**FIRE CLAY BRICK**

**Per 1000 f.o.b. Works**

**First Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | $43.00 |
| Georgia, Alabama | 40.00 to 47.00 |

**Second Quality**

| | |
|---|---|
| Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland | 35.00 to 38.00 |
| Georgia, Alabama | 30.00 to 35.00 |

**SILICA BRICK**

| | |
|---|---|
| Pennsylvania | 43.00 |
| Joliet, Ill., East Chicago, Ind. | 52.00 |
| Birmingham, Ala. | 50.00 to 51.00 |

**MAGNESITE BRICK**

**Per net ton**

| | |
|---|---|
| 9 x 4½ x 2½ | 65.00 |

**MAGNESITE**

| | |
|---|---|
| Dead burned grain, net ton, Chester, Pa., or Baltimore bases | 40.00 |
| Domes, Chewelah, Wash., base | 22.00 |

**CHROME BRICK**

| | |
|---|---|
| Net ton, Chester, Pa., and Baltimore base, 9 x 4½ x 2½ | 45.00 |

## Semifinished Steel

**Prices Per Gross Ton**

**BILLETS AND BLOOMS**

**4 x 4-inch base**

| | |
|---|---|
| Pittsburgh, open-hearth | $31.00 |
| Pittsburgh, bessemer | 31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Philadelphia | 36.30 |
| Chicago | 32.00 |
| Forging, Chicago | 37.00 |
| Forging, Pittsburgh | 36.00 |
| Forgings, Philadelphia | 41.30 |

**SHEET BARS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |
| Chicago | 32.00 |

**SLABS**

| | |
|---|---|
| Pittsburgh | $31.00 |
| Youngstown | 31.00 |
| Cleveland | 31.00 |

**WIRE RODS**

| | |
|---|---|
| Pittsburgh, Cleveland | $36.00 |
| Chicago | 37.00 |

**SKELP**

| | |
|---|---|
| All grades, Pittsburgh | 1.60c to 1.70c |

## Ferroalloys

**(In dollars, except Ferrochrome)**

| | |
|---|---|
| *Ferromanganese, 78-82%, tidewater, duty paid | $99.00 |
| *Ferromanganese, del. Pittsburgh | 103.79 |
| Spiegeleisen, 19-21%, domestic fur. spot† | 33.00 |
| *Ferrosilicon, 50 per cent, freight all., c. l. | 83.50 |
| Do, less carload | 88.50 |
| Do, 75 per cent | 13.00 to 15.00 |
| Ferrochrome, 66-70 chromium, 4-6 carbon. cts. lb., con., del. | 11.00 |
| Do, for spot delivery | 11.50 |
| Ferrotungsten, stand., lb. cont. | 1.10 to 1.15 |
| Ferrovanadium, 30-40 per cent, per lb., contained, on analysis | 3.15 to 3.65 |
| Ferro-carbon-titanium carload producers' plants, net ton | 160.00 |
| Do, one ton to c. l. | 170.00 |
| Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis (18 per cent) | 91.00 |
| Ferrophosphorus, electrolytic per ton carload, 23-25% f.o.b. Anniston, Ala., 24% | 122.50 |

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

## Fluorspar

**85 and 5 per cent grade**

| | |
|---|---|
| Washed gravel Kentucky and Illinois mines, per net ton | $17.25 |
| Washed gravel, import duty paid east, tide, gross ton | 19.50 |

# WEIRTON

Weirton standards of dependable quality and efficient service are uniformly maintained—by the very latest processes and equipment, developed during twenty-five years of experience, and complete ownership control of raw materials from ore mine to finished product.

Customer confidence in the Weirton organization has resulted in an annual production of over a million and a quarter tons of finished and semi-finished Weirton products.

Pig Iron
Open Hearth Steel
Billets—Slabs—Sheet Bar—Skelp
Coke Tin Plate
Tin Mill Black Plate
Copper Bearing Terne Plate
Hot and Cold Rolled Strip Steel
and
Strip Steel Sheets
Galvanized, Black and Blue
Annealed Sheets
Single Pickled, Full Finished
and Auto Body Sheets

## WEIRTON STEEL CO.

*Division of National Steel Corporation*

**WEIRTON W. VA.**

SALES OFFICES IN ALL PRINCIPAL CITIES

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SAVE WITH STEEL

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# Pig Iron

**Shipments Ahead of November Rate—Demand Slow Until After Inventory—Buffalo Firmer**

PIG IRON PRICES, PAGE 90

**Pittsburgh**—Shipments of pig iron continue slightly ahead of the volume of new business, and about equal to the rate a month ago. Orders are coming in regularly but are limited to small lots. Consumers' stocks are low and this is expected to result in less than the usual curtailment in purchases at the close of the year, although suspensions for inventory will affect consumption. Important inquiries are lacking but some slight interest is shown in requirements for early next year. Prices are maintained fairly well, with little pressure from buyers.

**Boston**—One Buffalo furnace has withdrawn its $15.50 base price for eastern delivery, substituting $16, but at least one other Buffalo maker continues to quote $15.50. Less than 3000 tons of iron was sold in this district in the past week, and of this the Mystic Iron Works, Everett, Mass., booked 2500 tons.

**New York**—Pig iron demand is more active, with Buffalo iron firmer at $15.50 to $16, furnace, and southern iron $16.50, delivered New York docks. Sales total 12,000 tons, including 1500 tons for the Foran Foundry & Equipment Co., Flemington, N. J. According to unconfirmed reports the National Radiator Co., Trenton, N. J., purchased 1000 tons. Smaller sales include 200 tons of No. 1X and 150 tons of malleable for the Schenectady, N. Y., plant of the American Locomotive Co., and 500 tons of foundry iron for the Worthington Pump & Machinery Corp.'s Buffalo plant. E. & T. Fairbanks & Co., St. Johnsbury, Vt., is inquiring for 1000 tons of foundry iron, while Universal Pipe & Radiator Co. has been sounding the market on iron for its plants at Baltimore and Lansdale, Pa. Richmond Radiator Co. also is understood to be inquiring for a tonnage for Uniontown, Pa.

**Philadelphia**—Inquiries for pig iron and sales are small. The Baltimore & Ohio railroad is inquiring for 100 tons of foundry iron and a carload of charcoal iron, and the Seaboard Air Line is in the market for a carload of foundry iron. Prices are unchanged.

**Buffalo**—With one exception all Buffalo producers have withdrawn quotations under $16, base, furnace, for eastern delivery. An inquiry for 1000 tons of foundry iron for a New England consumer may test the market this week. Deliveries by barge during the first half of November were larger than those of any corresponding period in several months. The week's sales totaled 2500 to 3500 tons.

**Youngstown, O.**—A few small sales of No. 2 foundry and malleable pig iron continue to be made in this district. Furnace stocks show a tendency to accumulate slowly. The active Hubbard stack of the Youngstown Sheet & Tube Co. has resumed blast again to supply hot metal to an adjacent ingot mold plant. The Shenango Furnace Co. has relighted one of its Sharpsville, Pa., stacks. Quotations are unchanged at $17, furnace, for No. 2 foundry, and $17.50 for malleable and bessemer.

**Cleveland**—Moderate improvement is noted in pig iron shipments to automotive plants, in some instances running to as high as 15 per cent over October. Producers believe the tendency over the remainder of the year will be to hold down inventories. Furnace companies with headquarters in Cleveland booked 13,000 tons in the past week, slightly less than in the week preceding. Little interest is manifested in first quarter. No disposition is noted toward further price reductions, makers taking a firmer grip on $16 to $17, base, lake furnace, for shipment in western Ohio and northern Indiana, and on $17.50 to $18 for the Michigan territory outside Detroit. Cleveland makers say $16 is their minimum for shipment to competitive points, while the price for delivery in Cleveland continues $17.50, base.

**Cincinnati**—The price situation here has been unaffected so far by the purchase of 50,000 tons of southern iron at Birmingham, Ala., by the American Radiator & Standard Sanitary Corp., as reported last week. The quotation of $11.50, base, Birmingham, is reported firmer but no inquiry which might provide a test is current. An Indiana melter is in the market for 1200 tons of northern iron for first quarter. Sales during the past week totaled about 1500 tons.

**Chicago**—The volume of pig iron sales is less than in the latter part of October, although tonnages are placed occasionally for first quarter. A Michigan stove manufacturer is in the market for 1200 to 1500 tons of foundry iron, and it is reported 3000 to 5000 tons in one lot was closed by a buyer east of here. The price is holding at $17.50, base, furnace, despite odd-lot sales of dock iron and steelworks offerings at concessions. Southern iron is reported to be stronger in this market, but it is indicated $11, base, Alabama furnace, could be done. Few sales of southern iron are noted. Deliveries of northern iron are gaining over October.

**St. Louis**—The melt has receded slightly since Nov. 1, and specifications are smaller than anticipated. Sales in the past week totaled 1600 tons. Prices are fairly steady, certain producers showing less eagerness to sell at prevailing quotations.

**Birmingham, Ala.**—Sales continue small but shipments to radiator manufacturers are increasing. A little tonnage is moving to the East and Middle West. Prices are unchanged.

**Toronto, Ont.**—Demand for pig iron in the Canadian market continues limited to small lots for prompt shipment. Sales in the past week, however, were slightly higher than in recent weeks as many melters are out of stock. Prices are unchanged.

## Ferroalloy Demand Slower; New Contract Price Awaited

Ferroalloy Prices, Page 90

**New York**—Pending announcement of a new contract price, ferromanganese continues unchanged at $99, duty paid, for carloads to 500 tons annually. Specifications reflect further reduction in steel operations. Domestic spiegeleisen, 19 to 21 per cent, is $33, furnace, subject to differentials on quantities. Contracting in spiegeleisen is quiet.

**Pittsburgh**—Shipments of ferromanganese and spiegeleisen continue at a slower rate than a month ago. Contracting for 1931 is not expected to get under way for a number of weeks. The market currently is $103.79, delivered, for small lots of ferromanganese and $33, furnace, for spiegeleisen, with differentials on larger tonnages. Activity in other ferroalloys remains quiet. Prices are unchanged.

Engineers' Society of Western Pennsylvania held its fiftieth anniversary dinner Nov. 14 at the Duquesne Club, Pittsburgh. George S. Davison, president, Davison Coke & Iron Co., Pittsburgh, and John B. Kennedy, associate editor, *Collier's*, New York, were speakers.

# Scrap

**Further Declines Appear but Conditions Give Better Promise —Some Tonnages Covered**

**Chicago**—Purchase of 10,000 to 15,000 tons of heavy melting steel by a Gary, Ind., open-hearth melter, plus strength in copper, has had a mild stabilizing effect on the iron and steel scrap market. The prolonged decline appears to have been at least partially checked. The melting steel sale was at $10.50, making the range $10 to $10.50, or equivalent to the 1921 level. The attitude of consumers seems unchanged, restricted sales and disinclination to lay down more stocks prevailing. Further weakness is shown in such grades as 2 and 3-foot rail ends, No. 2 railroad wrought, shoveling steel, car wheels, and a few specialties. Monthly lists of western railroads have been closed and the flow of scrap to this market has been materially checked, although this has

# Iron and Steel Scrap Prices

**Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.**

### HEAVY MELTING STEEL

| | |
|---|---|
| Birmingham | 9.50 to 11.00 |
| Boston, dealers | 6.50 to 7.50 |
| Buffalo, No. 1 | 11.25 to 12.00 |
| Buffalo, No. 2 | 9.75 to 10.00 |
| Chicago | 10.00 to 10.50 |
| Cinci., deal. | 10.00 to 10.50 |
| Cleve., No. 1 | 10.25 to 10.50 |
| Cleve., No. 2 | 9.50 to 9.75 |
| Det., No. 1 deal. | 10.00 to 10.50 |
| Det., No. 2 deal. | 7.00 to 7.50 |
| E. Pa. del. mill | 11.50 to 12.50 |
| N. Y. del. R. R. | 7.50 |
| N Y. deal. No. 2 | 6.25 to 6.50 |
| N. Y., deal. yd. | 6.00 |
| Pitts., No. 1 | 12.50 to 13.50 |
| St. L. No. 1 sel | 10.50 to 11.00 |
| Federal, Ill. | 9.75 to 10.25 |
| Granite C., Ill. | 9.25 to 9.75 |
| Valleys No. 1 | 14.00 to 14.50 |

### COMPRESSED SHEETS

| | |
|---|---|
| Buffalo, dealers | 9.75 to 10.00 |
| Chicago | 9.00 to 9.50 |
| Cleveland | 8.75 to 9.00 |
| Detroit, dealers | 9.50 to 10.00 |
| E. Pa. new mat. | 10.50 to 11.50 |
| Pittsburgh | 12.50 to 13.00 |
| Valleys | 13.50 to 14.00 |

### BUNDLED SHEETS

| | |
|---|---|
| Buffalo | 8.00 to 8.50 |
| Cinci., deal | 9.25 to 9.75 |
| Cleveland | 7.00 to 7.50 |
| Eastern Pa. | 9.00 |
| Pittsburgh | 10.50 to 11.00 |
| St. Louis | 5.50 to 6.00 |

### SHEET CLIPPINGS LOOSE

| | |
|---|---|
| Chicago | 5.50 to 6.00 |
| Cincinnati | 5.50 to 6.00 |
| Detroit, dealers | 6.50 to 7.00 |
| St. Louis | 5.50 to 6.00 |

### STEEL RAILS SHORT

| | |
|---|---|
| Birmingham | 12.00 to 12.50 |
| Boston, dealers | 6.50 to 6.75 |
| Buffalo | 14.00 to 14.50 |
| Chicago (3 ft.) | 12.00 to 12.50 |
| Chicago (2 ft.) | 12.50 to 13.00 |
| Cinci., deal. | 15.50 to 16.00 |
| Detroit, deal | 14.00 to 14.50 |
| Pitts. (open-hearth, 3 ft. and less) | 15.00 to 15.50 |
| St. Louis | 13.50 to 14.00 |

### STOVE PLATE

| | |
|---|---|
| Birmingham | 8.50 to 9.00 |
| Boston, con. | 8.00 to 8.50 |
| Buffalo | 9.50 to 9.75 |
| Chicago, net | 6.50 to 7.00 |
| Cinci., deal. net | 5.75 to 6.25 |
| Det., net, deal. | 6.50 to 7.00 |
| Eastern Pa. | 9.00 |
| N. Y., deal. mill | 5.25 |
| St. Louis | 8.00 to 8.50 |

### COUPLERS, SPRINGS

| | |
|---|---|
| Buffalo | 13.50 to 14.00 |
| Chicago | 12.00 to 12.50 |
| Eastern Pa. | 16.00 to 17.00 |
| Pittsburgh | 15.50 to 16.00 |
| St. Louis | 11.50 to 12.00 |

### ANGLE BARS—STEEL

| | |
|---|---|
| Chicago | 12.00 to 12.50 |
| St. Louis | 9.75 to 10.25 |

### LOW PHOSPHORUS

| | |
|---|---|
| Buff., billets and bloom crops | 15.00 to 15.50 |
| Cleveland bil. and bloom crops | 17.50 to 18.00 |
| Eastern Pa. | 17.50 to 18.00 |
| Pittsburgh billet, bloom crops | 17.50 to 18.00 |
| Pitts. sheet bar crops | 16.00 to 16.50 |

### FROGS, SWITCHES

| | |
|---|---|
| Chicago | 11.00 to 11.50 |
| St. Louis | 10.75 to 11.25 |

### SHOVELING STEEL

| | |
|---|---|
| Chicago | 10.00 to 10.50 |
| Cleveland | 6.50 to 6.75 |
| St. Louis | 9.75 to 10.25 |

### RAILROAD WROUGHT

| | |
|---|---|
| Birmingham | 9.50 to 10.00 |
| Boston, dealers | 8.00 to 8.50 |
| Buffalo, No. 1 | 9.00 to 9.25 |
| Buffalo, No. 2 | 11.50 to 12.00 |
| Chicago, No. 1 | 10.00 to 10.50 |
| Chicago, No. 2 | 10.00 to 10.50 |
| Cinci., No. 2 | 10.00 to 10.50 |
| Eastern Pa. | 13.50 |
| N. Y., No. 1 deal. | 10.00 to 10.50 |
| Pitts., No. 2 | 13.00 to 13.50 |
| St. Louis, No. 1 | 7.75 to 8.25 |
| St. Louis, No. 2 | 9.75 to 10.25 |

### SPECIFICATION PIPE

| | |
|---|---|
| Boston | 5.50 to 6.00 |
| Eastern Pa. | 12.00 |
| N. Y., deal | 7.25 to 7.50 |

### BUSHELING

| | |
|---|---|
| Buffalo, No. 1 | 9.75 to 10.00 |
| Chicago, No. 1 | 8.00 to 8.50 |
| Cinn., No. 1 dl. | 8.50 to 9.00 |
| Cinn., No. 2 | 5.50 to 6.00 |
| Cleve., No. 2 | 6.00 to 6.50 |
| Det., No. 1 new deal. | 8.50 to 9.00 |
| St. L. No. 1 | 7.00 to 7.50 |
| Val. new No. 1 | 10.25 to 10.75 |

### MACHINE TURNINGS

| | |
|---|---|
| Birmingham | 7.50 to 8.00 |
| Boston, dealers | 2.50 to 3.00 |
| Buffalo | 6.50 to 8.25 |
| Chicago | 4.75 to 5.25 |
| Cinn., deal. | 5.50 to 6.00 |
| Cleveland | 4.50 to 5.00 |
| Detroit | 3.75 to 4.25 |
| Eastern Pa. | 7.00 to 8.00 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 6.00 to 6.50 |
| St. Louis | 4.00 to 4.50 |
| Valleys | 9.00 to 9.50 |

### BORINGS AND TURNINGS For Blast Furnace Use

| | |
|---|---|
| Boston | 2.50 to 3.00 |
| Buffalo | 7.50 to 8.50 |
| Cinn., deal. | 5.50 to 6.00 |
| Cleveland | 6.50 to 6.75 |
| Detroit, deal | 4.50 to 5.00 |
| Eastern Pa. | 7.00 to 8.00 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 7.50 to 8.00 |

### CAST IRON BORINGS

| | |
|---|---|
| Birming., chem. | 12.50 to 13.00 |
| Birming., plain | 7.50 to 8.00 |
| Boston., chem. | 9.00 to 9.50 |
| Boston, deal. | 3.00 to 3.25 |
| Buffalo | 7.50 to 8.50 |
| Chicago | 3.75 to 4.25 |
| Cinn., deal. | 5.50 to 6.00 |
| Cleveland | 6.50 to 6.75 |
| Detroit, deal | 4.50 to 5.00 |
| Eastern Pa. | 8.50 |
| E. Pa., chem. | 14.00 to 14.50 |
| N. Y., deal. | 4.00 |
| Pittsburgh | 7.50 to 8.00 |
| St. Louis | 6.00 to 6.50 |

### PIPE AND FLUES

| | |
|---|---|
| Cinn., deal | 8.00 to 8.50 |

### RAILROAD GRATE BARS

| | |
|---|---|
| Buffalo | 8.00 to 8.50 |
| Chicago net | 6.50 to 7.00 |
| Cincinnati | 7.00 to 7.50 |
| Eastern Pa. | 9.50 to 10.00 |
| N. Y., deal. | 6.00 |
| St. Louis | 7.50 to 8.00 |

### FORGE FLASHINGS

| | |
|---|---|
| Boston, deal. | 6.00 to 6.25 |
| Buffalo | 10.00 to 10.50 |
| Cleve. ov. 10 in. | 10.00 to 10.50 |
| Detroit | 9.00 to 9.50 |

### FORGE SCRAP

| | |
|---|---|
| Boston, del. | 5.50 to 6.00 |
| Chicago | 13.50 to 14.00 |
| Eastern Pa. | 11.00 |

### ARCH BARS, TRANSOMS

| | |
|---|---|
| Chicago, net | 11.50 to 12.00 |
| St. Louis | 11.50 to 12.00 |

### AXLE TURNINGS

| | |
|---|---|
| Boston, deal. | 6.75 to 7.00 |
| Buffalo | 10.50 to 11.00 |
| Chi., steelworks | 6.50 to 7.00 |
| Cleveland | 11.00 to 11.50 |
| Eastern Pa. | 11.50 to 12.00 |
| Pittsburgh | 11.50 to 12.00 |
| St. Louis | 7.50 to 8.00 |

### STEEL CAR AXLES

| | |
|---|---|
| Birmingham | 14.00 to 15.50 |
| Boston, ship. pt. | 16.00 to 16.50 |
| Buffalo | 15.50 to 16.00 |
| Chicago | 15.10 to 15.70 |
| Eastern Pa. | 20.50 |
| St. Louis | 14.00 to 14.50 |

### SHAFTING

| | |
|---|---|
| Bos., ship. pt. | 13.00 to 13.50 |
| Chicago | 12.90 to 13.45 |
| N. Y., deal. | 13.00 to 14.00 |
| St. Louis | 12.00 to 12.50 |

### CAR WHEELS

| | |
|---|---|
| Birming., iron | 10.00 to 11.00 |
| Boston, iron | 14.00 to 14.50 |
| Buffalo, iron | 13.00 to 13.50 |
| Buffalo, steel | 14.00 to 14.50 |
| Chicago, iron | 12.00 to 12.50 |
| Chi., roll steel | 13.75 to 14.25 |
| Cincinnati, iron | 11.00 to 11.50 |
| Pitts., iron | 13.50 to 14.00 |
| Pitts., steel | 15.50 to 16.00 |
| St. Louis iron | 10.50 to 11.00 |
| St. Louis, steel | 13.00 to 13.50 |
| E. Pa. steel | 16.00 to 16.50 |
| E. Pa. iron | 14.50 to 15.00 |

### NO. 1 CAST SCRAP

| | |
|---|---|
| Birming., cup. | 10.00 to 10.50 |
| Buffalo (mac.) | 10.00 to 10.50 |
| Boston, textile | 11.00 to 11.50 |
| Chicago, mach. | 10.65 to 11.20 |
| Chi., railroad | 10.10 to 10.65 |
| Chicago, agri. | 9.50 to 10.10 |
| Cinn., mach. cup., gross | 14.50 to 15.50 |
| Cleve. cupola | 13.50 to 14.00 |
| Det., net deal. | 8.50 to 9.00 |
| E. Pa. cupola | 13.50 |
| N. Y. cup. deal. | 8.00 to 8.50 |
| N. Y., del. local foundries | 14.00 |
| Pitts., cupola | 12.50 to 13.00 |
| San Fran., del. | 13.50 to 14.00 |
| Seattle | 14.00 to 14.25 |
| St. L. No. 1 ma. | 10.00 to 10.50 |
| St. L. No. 1 | 9.25 to 9.75 |

### HEAVY CAST

| | |
|---|---|
| Boston | 10.50 to 11.00 |
| Bos. mach. cast | 11.50 to 12.50 |
| Buffalo, break | 7.25 to 7.75 |
| Cleve., break | 7.00 to 7.50 |
| Detroit, auto, net deal. | 10.50 to 11.00 |
| Det., break., dl. | 6.50 to 7.00 |
| Eastern Pa. | 11.00 to 11.50 |
| N. Y. No. 1 dl. | 7.00 to 8.00 |
| N. Y. break. dl. | 7.00 to 7.50 |
| Pittsburgh | 9.00 to 9.50 |

### MALLEABLE

| | |
|---|---|
| Boston R. R. | 14.00 to 14.50 |
| Buffalo | 13.50 to 14.00 |
| Chicago, agri. | 11.00 to 11.50 |
| Chicago, R. R. | 12.50 to 13.00 |
| Cinn., R. R. dl. | 12.50 to 13.00 |
| Cinn., agri., dl. | 12.50 to 13.00 |
| Cleve., rail | 12.50 to 13.00 |
| Det. auto deal. | 12.00 to 12.50 |
| St. Louis, rail | 10.00 to 10.50 |

### RAILS FOR ROLLING 5 feet and over

| | |
|---|---|
| Birming., cup. | 12.00 to 12.50 |
| Boston | 10.00 to 10.25 |
| Buffalo | 10.50 to 11.00 |
| Chicago | 13.00 to 13.50 |
| Eastern Pa. | 20.50 |
| New York | 9.50 to 10.00 |
| St. Louis | 11.50 to 12.00 |

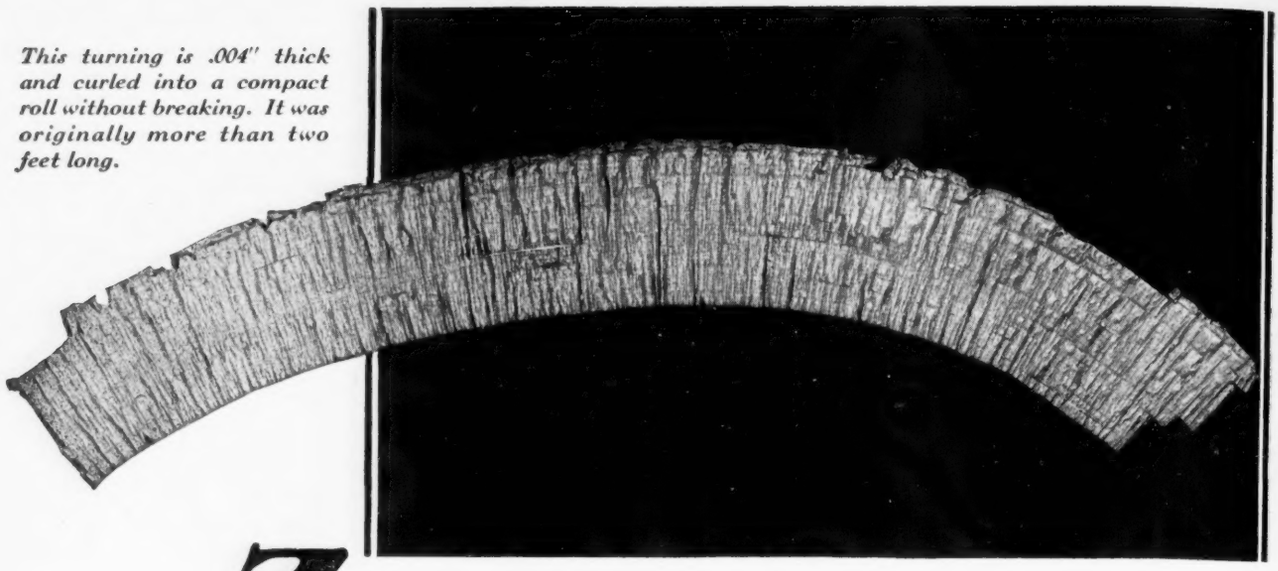
### LOCOMOTIVE TIRES

| | |
|---|---|
| Chicago, cut | 13.00 to 13.50 |
| St. L. No. 1 | 11.00 to 11.50 |

### LOW PHOS. PUNCHINGS

| | |
|---|---|
| Chicago | 12.00 to 12.50 |
| Pittsburgh | 15.00 to 15.50 |
| Eastern Pa. | 16.00 to 17.00 |
| Buffalo | 14.00 to 14.50 |

*This turning is .004" thick and curled into a compact roll without breaking. It was originally more than two feet long.*



# ZIRCONIUM IMPROVES PERFORMANCE OF CUTTING TOOLS

THE turning pictured here was taken from a steel casting treated with Zirconium. It illustrates the effect of the quality of the steel on the performance of the cutting tool.

Zirconium treatment eliminated the hard, brittle inclusions ordinarily encountered, which seriously affect machinability and add to tool cost.

You can demonstrate this advantage of Zirconium treatment in your own plant. Electromet Engineers will gladly give you complete details.

*Sole Distributors*

**ELECTRO METALLURGICAL SALES CORPORATION**

*Unit of Union Carbide* UCC *and Carbon Corporation*

Carbide and Carbon Building, 30 East 42nd Street
New York, N. Y.

# Electromet
## Ferro-Alloys & Metals

**CHROMIUM**
High-Carbon Ferrochrome (maximum 6% carbon)
Low-Carbon Ferrochrome (in grades, maximum 0.06% to maximum 2.00% carbon)
Chromium Metal
Chromium-Copper
Miscellaneous Chromium Alloys

**MANGANESE**
Standard Ferromanganese 78 to 82%
Low-Carbon Ferromanganese
Medium-Carbon Ferromanganese
Manganese Metal
Silico-Manganese
Manganese-Copper
Miscellaneous Manganese Alloys

**SILICON**
Ferrosilicon 15%
Ferrosilicon 50%
Ferrosilicon 75%
Ferrosilicon 80 to 85%
Ferrosilicon 90 to 95%
Refined Silicon (minimum 97% Silicon)
Calcium-Silicon
Calcium-Aluminum-Silicon
Calcium-Manganese-Silicon
Silicon-Copper
Silico-Manganese
Miscellaneous Silicon Alloys

**VANADIUM**
All Grades

**ZIRCONIUM**
Silicon-Zirconium
Zirconium-Ferrosilicon

little influence in view of conditions.

**Boston**—Business shows little change in scrap and prices continue to drag. There were small recessions in quotations on eight or ten grades in the past week, but largely the result of guesswork. Worcester has been a buyer of heavy melting steel, skeleton steel and a little other material in the past week, but Pennsylvania mills appear out of the market.

**New York**—Dealers have again reduced buying prices on No. 1 railroad steel 50 cents a ton, quoting $7.50, New York. This is based on $11, delivered, for Coatesville, Pa. Stove plate for foundry consumption also has been reduced, holding at $5.50, New York, against a previous spread of $5.50 to $6. Trading generally is slack.

## Canadian Scrap

**Dealers' Buying Prices**

**MONTREAL**

**Per Gross Ton**

| | |
|---|---|
| Iron axles | $11.00 |
| Steel axles | 10.00 |
| Car wheels | 8.00 |
| Stove plate | 8.00 |
| Wrought pipe | 2.00 |
| Turnings | 2.00 |
| Heavy melting steel | 6.00 |

**TORONTO**

| | |
|---|---|
| Steel axles | 7.00 |
| Iron axles | 7.00 |
| Heavy melting steel | 7.00 |
| Turnings | 2.00 |
| No. 1 mach. cast (net) | 9.00 |
| Malleable (net) | 7.00 |

**Philadelphia**—Somewhat larger movement is apparent in steel and iron scrap with substantial sales of No. 2 melting steel at $9.50, delivered and bundled sheets, stove plate, and rolled steel wheels somewhat lower.

**Cleveland**—Quiet continues in steel and iron scrap and mills are entirely out of the market. Dealers find it almost impossible to dispose of tonnages in other consuming districts. Weakness is increasing and heavy melting steel, bundled and compressed sheets and borings and turnings are 50 cents lower than a week ago. Stocks are increasing.

**Pittsburgh**—Prices of steel and iron scrap have weakened further on light buying. Heavy melting steel has been sold in small lots at $12.50 and at $13.50, representing a decline of 25 cents on the average from a week ago. Mills continue to show no interest in large purchases and the market is nearly as dull as for the past month. Blast furnace material is off 50 cents on recent buying.

**Buffalo**—Dealers report a mixed trend in scrap. Bethlehem has bought 5000 tons additional of scrap for Lackawanna, N. Y., cutting the price another 50 cents a ton to $11.50 for No. 1 and $10 for No. 2. It also is reported dealers seeking contracts now have been told $11 and $9.50, respectively, are the new top prices for these materials. Shortage of material and low production of some grades is reported to have forced dealers to increase offers to obtain material to deliver on contracts, which are of fairly large size in some instances, particularly in the case of material for delivery at nearby points.

**Detroit**—Though there has been no pronounced price recession in steel and iron scrap the trend is weak. Compressed sheets are down at $9.50 to $10, auto malleable is $12 to $12.50, heavy breakable cast is $6.50 to $7. Other grades weaker are new No. 1 busheling, loose sheet clippings and machine shop turnings.

**Cincinnati**—Dealers' quotations for iron and steel scrap remain nominally unchanged except on cast iron borings, machine shop turnings and loose sheet clippings, in which especial weakness has developed, causing 50-cent cuts. The market remains dull. Heavy melting steel continues $10 to $10.50 in face of bids for railroad lists.

**St. Louis**—The purchase of a round tonnage of steel by an east side mill formed the only break in the monotony of several weeks. While the exact tonnage and price were not disclosed, it is understood that more than 5000 tons were involved, and, grade considered, the price represented the lowest so far touched on the present downward movement. Otherwise conditions remain unchanged, with the downward trend in values continuing unbroken. Some fifteen specific reductions were recorded in dealers' lists, most of which affected steel grades.

**Birmingham, Ala.**—Little old material is moving and dealers have plenty available. A sale of heavy melting steel is reported under $11, though the tonnage was not heavy, the largest melter not requiring much at present.

**Toronto, Ont.**—Iron and steel scrap continues depressed, and sales are small lots for immediate use. Inquiry contains nothing for forward delivery. Mills continue to take in heavy melting steel, but there is practically no demand for turnings. Iron grades have improved slightly but no large tonnages are involved. Prices are unchanged.

# Coke

**Beehive Furnace Fuel Offered at Lower Prices—Foundry Shipments Fair**

COKE PRICES, PAGE 90

**Pittsburgh**—Beehive coke production has declined to the lowest level of the year, corresponding with further moderation in demand. The spot market for furnace coke is at a standstill, and although prices are untested some producers are willing to sell at less than $2.60. Beehive foundry coke shipments are lighter but by-product fuel is in fairly good demand. Industrial and domestic heating coke is moving slowly for this period.

Beehive coke production in the Connellsville district during the week of Nov. 8 was 15,860 tons compared with 17,520 in the preceding week and 53,230 a year ago, according to the *Connellsville Courier*.

**Boston**—Coke consumptions is at a low ebb and there is no immediate prospect for improvement. Prices are steady.

**New York**—Coke prices are unchanged, beehive furnace holding at $2.50 to $2.65, Connellsville, and standard foundry at $3.50 to $3.75, Connellsville. Buying is sluggish. Premium foundry coke is $4.70 to $4.85, Latrobe, Pa. By-product coke is steady at $9 to $9.40, Newark, N. J.; $11 New England points; and $9, Philadelphia.

**Cincinnati**—A light melt is still reflected in demand for by-product foundry coke. Domestic sales are spotty.

**Birmingham, Ala.**—Production has been reduced, more by-product coke ovens being idle than in many months. Melters are buying sparingly.

**Chicago**—By-product coke production is off, due to mild weather. Foundry shipments continue at about the same rate as in October. Prices are unchanged.

**St. Louis**—Specifications and new orders for coke continue in small volume. Shipments of domestic sizes have slowed up due to mild weather. Quotations are unchanged, but the market lacks firmness.

# Pacific Coast

**Structurals Show Activity and Plate Demand Is Fair—Totals of Steel Lettings Are Smaller Than in 1929—Cast Pipe Tonnage Is in Smaller Volume—Car Frames Take Plates**

**Seattle**—While the business situation as a whole in the Pacific Northwest is not active, present indications are that considerable tonnage will be awarded before the end of the year.

Nearly 4000 tons was awarded this week and included 1700 tons of reinforcing materials for the city light tower, Seattle, booked by the Northwest Steel Rolling Mills, Seattle. It is claimed that this 27-story warehouse and office building will be the tallest in the country of reinforced construction type.

### Bars, Plates and Shapes

Aside from the contract for reinforcing bars for Seattle's light tower no other reinforcing projects calling for 100 ton lots were awarded this week. Local steel mills have fair tonnage on books but decreased activity is expected during the next 60 days. A small tonnage for the Kress building, Wenatchee, Wash., went to the Northwest Steel Rolling Mills, while Pacific Coast Steel Corp. booked a small order for the Tacoma steam power plant. A large concrete bridge is planned for the Boise river, Idaho, while a large warehouse for Ames, Harris, Neville Co., Portland, Oreg., is pending, general contract to Ross Hammond. Bar prices are unchanged.

Pacific Coast Steel Corp., Seattle, has taken a contract to furnish 190,000 tie plates for the North Pacific railroad, requiring 1100 tons of steel.

Plate awards this week were confined to one contract of 600 tons for Tacoma pipe line job, 11,000 feet of 30-inch main, taken by the Birchfield Boiler Works, Tacoma. Material is to be furnished, it is stated, by the United States Steel Products Co. No important projects are pending. Local plants are bidding on 600 steel underframes, 2000 tons of plates, for the Pacific Fruit Express.

Pacific Car & Foundry Co. has been awarded the contract for furnishing crest gate guards for the Rock Island dam, Columbia river hydro-electric project, requiring 337 tons of structurals. Stone & Webster are the builders. Local plants are figuring on 4000 tons of shapes for the proposed Seattle assembly plant for the Ford Motor Co. Isaacson Iron Works, Seattle, has a small tonnage for the Kress building, Wenatchee, Wash. Coos county, Oregon, will open bids Dec. 8 for the $300,000 Isthmus Inlet bridge.

### Finished Materials

The jobbing trade is spotted, business being in small lots for quick delivery. Actual requirements are being ordered out of stock, mill buying being low. Prices are unchanged.

### Pipe Prospects Are Good

City council of Aberdeen, Wash., has ordered preliminary work on the replacement of four miles of pipeline. The Snow Lake water project, Wenatchee, Wash., is reported financed to the extent of $750,000, plans calling for a gravity system. James Ollason, clerk, Hollyburn, B. C., has received bids for furnishing 37,200 feet of 4 to 14-inch cast iron pipe. Bids for furnishing pipe for Brighouse, B. C., said to total 64 miles, will be received Dec. 1 instead of Nov. 17. Tenders for fittings and supplies will be opened Dec. 15. Voters have authorized $400,000 for this project.

## Coast Pig Iron Prices

| | |
|---|---|
| Utah basic | $22.00 to 24.00 |
| Utah foundry | 22.00 to 24.00 |
| *German | 24.25 |
| *Indian | 22.00 to 24.00 |

*C.i.f. duty paid.

## Rains Will Hamper Building

**San Francisco**—(*By Air Mail*)—Little improvement is noted in demand for steel products on the Pacific Coast. Considerable municipal, county and state work is being planned for early release, but with the approach of the rainy season this work will be greatly hampered. Prices continue to hold fairly well to levels established some time ago, despite the lack of heavy demand.

Awards of concrete bars aggregated 945 tons. So far this year 59,052 tons have been booked as compared with 74,159 tons for the same period last year. W. C. Hauck & Co., took 268 tons for a hospital at Stockton, Calif. An unnamed interest secured 350 tons for an apartment on Sunset boulevard, Los Angeles. The only new inquiry of importance calls for 400 tons for a bridge at Coquille, Oreg., bids on which will be opened Dec. 8. No change in out-of-stock quotations in the San Francisco and Los Angeles districts is noted, 2.50c, base, on carload lots, prevailing.

### Pipe Lines Take Tonnage

The Western Pipe & Steel Co. was awarded 1800 tons for 600 car underframes for the Pacific Fruit Express Co., San Francisco. This work will be done in its Los Angeles shops. No award has yet been made on 390 tons for a 24-inch welded steel pipe line for Oakland, Calif. Bids have been opened on 3000 tons for a cruiser to be built at the Mare Island navy yard. Santa Cruz, Calif., will open bids Nov. 17 for 350 tons for a 20-inch welded steel pipe line. Prices range from 2.05c to 2.15c, c.i.f.

The structural steel shape market is active. While awards were not heavy, several important new projects have come into the market for figures. The Pacific Coast Engineering Co. took 600 tons for the Engineers building at Berkeley, Calif., for the University of California. The Western Pipe & Steel Co. booked 1200 tons for 600 car underframes for the Pacific Fruit Express Co. Bids will be opened Nov. 17 for 7500 tons for the new Olympic club in San Francisco.

San Diego, Calif., will open bids Dec. 1 for the First street bridge. Bids will be opened Dec. 3 for the Polgo river bridge in Butte County, Calif., involving 787 tons. Bids were rejected on 4000 tons for a warehouse in Honolulu for the Hawaiian Pineapple Co. and plans will be revised. The Western Pacific Co. has opened bids on 300 tons for 75-foot plate girder spans. Plain shapes are quoted at 2.15c, to 2.25c, c.i.f.

### Other Finished Material

Activity in cast iron pipe was restricted to one or two relatively unimportant awards. Only two projects involving over 100 tons are up for figures. The United States Pipe & Foundry Co. secured 100 tons for Eureka, Calif. Anaheim, Calif., placed 105 tons with the American Cast Iron Pipe Co. The Pacific Gas & Electric Co., San Francisco, has placed 40,000 feet of 12-inch gas pipe, 600 tons, with an unnamed interest.

# Steel, Wrought and Cast Iron Pipe, and Tubing

## Welded Iron, Steel Pipe

**Base Price $200 Ton**

Base Discounts on steel pipe, Pittsburgh and Lorain, O., to jobbers in carloads. Indiana Harbor, Ind., and Evanston, Ill., 2 points less. Chicago del., 2½ points less. Wrought iron pipe, Pittsburgh base.

**BUTT WELD**

| Steel | | | Iron | | |
|---|---|---|---|---|---|
| In. | Blk. | Gal. | In. | Blk. | Gal. |
| ½ | 58 | 44½ | ½ | 23 | 5 |
| ¾ | 62 | 50½ | ¾ | 28 | 11 |
| 1—3 | 64 | 52½ | 1 and 1¼ | 31 | 15 |
| | | | 1½ and 2 | 35 | 18 |

**LAP WELD**

| | | | | | |
|---|---|---|---|---|---|
| 2 | 57 | 45½ | 2 | 23 | 9 |
| 2½—6 | 61 | 49½ | 2½—3½ | 28 | 13 |
| 7—8 | 58 | 45½ | 4—6 | 30 | 17 |
| 9—10 | 56 | 43½ | 7 and 8 | 29 | 16 |
| 11—12 | 55 | 42½ | 9—12 | 26 | 11 |

**BUTT WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| ½ | 55 | 44½ | ¼ & ⅜ | +13 | +48 |
| ¾ | 60 | 49½ | ½ | 23 | 7 |
| 1—1½ | 62 | 51½ | ¾ | 28 | 12 |
| 2—3 | 63 | 52½ | 1—2 | 34 | 18 |

**LAP WELD**

*Extra strong, plain ends*

| | | | | | |
|---|---|---|---|---|---|
| 2 | 55 | 44½ | 2 | 29 | 13 |
| 2½—4 | 59 | 48½ | 2½—4 | 34 | 20 |
| 4½—6 | 58 | 47½ | 4½—6 | 33 | 19 |
| 7—8 | 54 | 41½ | 7 and 8 | 31 | 17 |
| 9—10 | 47 | 34½ | 9—12 | 21 | 8 |
| 11—12 | 46 | 33½ | | | |

To large jobbers these discounts on steel pipe increased on black by 1 point and two discounts of 5 per cent; on galvanized by 1½ points with two 5 per cents. On iron pipe large jobbers obtain additional discount of 1 point with 5 and 2½ per cent on black and galvanized.

**BOILER TUBES**

| Carload Discounts, Lap Welded Steel | | f.o.b. Pittsburgh Charcoal Iron | |
|---|---|---|---|
| 2—2¼ | 38 | 1¾ | 8 |
| 2½—2¾ | 46 | 2—2½ | 13 |
| 3 | 52 | 2½—2¾ | 16 |
| 3¼—3¾ | 54 | 3 | 17 |
| 4 | 57 | 3¼—3½ | 18 |
| 4½—6 | 46 | 4 | 20 |
| 1½ | 1 | 4½ | 21 |

On lots of a carload or more, above base discounts subject to preferential of two 5 per cent discounts on steel and 10 per cent on charcoal iron. Smaller quantities subject to following modifications from base discounts.

Lap Welded Steel—Under 10,000 pounds, 6 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and one 5 per cent; on 10,000 pounds to carload, 4 points under base and two 5 per cents. Charcoal iron—under 10,000 pounds, 2 points under base; on 10,000 pounds to carload, base and one 5 per cent.

**STANDARD COMMERCIAL SEAMLESS BOILER TUBES**

**COLD DRAWN**

| | | | |
|---|---|---|---|
| 1 | 61 | 3 | 46 |
| 1¼—1½ | 53 | 3¼—3½ | 48 |
| 1¾ | 37 | 4 | 51 |
| 2—2¼ | 32 | 4½, 5, 6 | 40 |
| 2½—2¾ | 40 | | |

**HOT ROLLED**

| | | | |
|---|---|---|---|
| 2—2¼ | 38 | 3¼—3½ | 54 |
| 2½—2¾ | 46 | 4 | 57 |
| 3 | 52 | 4½, 5, 6 | 46 |

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed. No extra for lengths up to and including 24 feet. Sizes smaller than 1 inch and lighter than standard gage to be held at mechanical tubes list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Tubing

**Cold drawn; f.o.b. mill**

Random lengths over 5 ft. .....55%
Selected lengths, 1 to 18 ft. .....53%

## Cast Iron Water Pipe

**Class B Pipe—Per Net Ton**

| | |
|---|---|
| Six-inch and over, Bir. | $37.00 to 38.00 |
| Four-inch, Birmingham | 41.00 to 42.00 |
| Four-inch, Chicago | 49.20 to 50.20 |
| Six to 24-inch, Chicago | 45.20 to 46.20 |
| Six-inch and over, N. Y. | 38.50 to 40.50 |
| Four-inch, New York | 41.50 to 42.50 |
| Stand. fittings, Bir. base | $100.00 |

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher. Class A pipe $4 higher than Class B.

## Warehouse Quotations at Leading Centers, in Cents Per Pound

**STEEL BARS**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga | 3.10c |
| Chicago | 2.90c |
| Cincinnati | 3.15c |
| Cleveland | 2.85c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los. Ang. | 3.40c |
| New York†† | 3.10c |
| Philadelphia | 2.60c |
| Pittsburgh | 2.75c |
| Portland | 3.15c |
| San Frans. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| St. Paul | 3.00c |
| Tulsa | 3.65c |

**IRON BARS**

| | |
|---|---|
| Baltimore | 3.25c |
| Boston | 3.265c |
| Buffalo | 3.15c |
| Chattanooga | 3.10c |
| Chicago | 3.00c |
| Cincinnati | 3.15c |
| Detroit | 3.00c |
| New York†† | 3.10c |
| Philadelphia | 2.60c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |

**REINFOR. BARS**

| | |
|---|---|
| Baltimore | 2.50c-3.31c |
| Boston | 3.265c |
| Buffalo | 2.95c |
| Chattanooga | 3.10c |
| Cincinnati | 3.15c |
| Cleveland | 2.25c-2.44c |
| Detroit | 3.00c |
| Houston | 3.00c |
| Los Ang. cl. | 2.40c |
| Los Ang. lcl. | 2.70c |
| New York | 2.65c-3.10c |
| Phila. | 2.40c-3.00c |
| Pittsburgh | 2.75c |
| San Fran. cl. | 2.30c |
| San Fran. lcl. | 2.60c |
| Seattle | 3.15c |
| St. Louis | 3.15c |
| Tulsa | 3.65c |
| Young. | 2.30c-2.60c |

**SHAPES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland | 2.95c |
| Detroit | 3.10c |
| Houston | 3.25c |
| Los. Ang. | 3.40c |
| New York | 3.10c |
| Philadelphia | 2.50c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**PLATES**

| | |
|---|---|
| Baltimore | 3.00c |
| Boston | 3.365c |
| Buffalo | 3.25c |
| Chattanooga | 3.20c |
| Chicago | 3.00c |
| Cincinnati | 3.25c |
| Cleveland. ¼-in. and thicker | 2.95c |
| Clev., 3/16-in. | 3.20c |
| Detroit | 3.10c |
| Det., 3/16-in. | 3.10c |
| Houston | 3.00c |
| Los Angeles | 3.40c |
| New York | 3.30c |
| Philadelphia | 2.50c |
| Phila. floor | 5.10c |
| Pittsburgh | 2.85c |
| Portland | 3.15c |
| San Fran. | 3.40c |
| Seattle | 3.15c |
| St. Louis | 3.25c |
| St. Paul | 3.10c |
| Tulsa | 3.75c |

**NO. 10 BLUE**

| | |
|---|---|
| Baltimore | 3.50c |
| Bost. 3/16-in. | 9.915c |
| Buffalo | 3.50c |
| Chattanooga | 3.60c |
| Chicago | 3.35c |
| Cincinnati | 3.45c |
| Cleveland | 3.10c |
| Detroit | 3.35c |
| Houston | 3.90c |
| Los Ang. | 3.95c |
| New York | 3.40c |
| Portland | 4.00c |
| Phila.*† | 3.05c |
| Pitts.** | 2.75c |
| San Fran. | 3.80c |
| Seattle | 4.00c |
| St. Louis | 3.45c |
| St. Paul | 3.40c |
| Tulsa | 3.95c |

**NO. 24 BLACK**

| | |
|---|---|
| Balt.*† | 3.75c |
| Boston | 4.70c |
| Buffalo | 4.20c |
| Chicago | 3.80c |
| Cincinnati | 4.05c |
| Clev.*** | 3.75c |
| Detroit | 3.75c |
| Los Ang. | 4.70c |
| New York | 3.55c-3.65c |
| Phila.*† | 3.60c |
| Pitts.** | 3.40c |
| Portland | 5.00c |
| San Fran. | 4.35c |
| Seattle | 5.00c |
| St. Louis | 4.05c |
| St. Paul | 3.545c |
| Tulsa | 4.45c |

**NO. 24 GAL. SHEETS**

| | |
|---|---|
| Balt.*† | 4.25c |
| Boston | 5.45c |
| Buffalo | 4.40c-4.60c |
| Chicago (local del.) | 4.35c |
| Chicago (outside) | 4.35c-4.60c |
| Cincinnati | 4.90c |
| Cleveland*** | 4.35c |
| Detroit | 4.25c |
| Houston | 5.40c |
| Los Ang. | 5.10c |
| New York | 4.25c |
| Phila.*† | 4.15c |
| Pitts.** | 4.00c |
| Portland | 5.50c |
| San Fran. | 5.00c |
| Seattle | 5.50c |
| St. Louis | 4.60c |
| St. Paul | 4.23c |
| Tulsa | 5.35c |

**BANDS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 4.015c-5.00c |
| Buffalo | 3.50c |
| Chattanooga | 3.30c |
| Chicago | 3.10c |
| Cincinnati | 3.35c |
| Cleveland | 3.10c |
| Det. 3/16-in. & lighter | 3.30c |
| Houston | 3.65c |
| Los Ang. | 4.30c |
| New York | 3.40c |
| Philadelphia | 2.90c |
| Pittsburgh | 3.10c |
| Portland | 3.50c |
| San Fran. | 3.75c |
| Seattle | 4.15c |
| St. Paul | 3.75c |
| Tulsa | 3.85c |

**HOOPS**

| | |
|---|---|
| Baltimore | 3.50c |
| Boston | 5.50c-6.00c |
| Buffalo | 3.90c |
| Chicago | 3.65c |
| Cincinnati | 3.90c |
| Cleveland | 3.65c |
| Det. No. 14 & lighter | 3.80c |
| New York | 3.75c |
| Philadelphia | 3.15c |
| Pittsburgh | 4.10c |
| Seattle | 5.15c |
| St. Paul | 3.70c |

**COLD FIN. STEEL**

**Rounds & Hexagons**

| | |
|---|---|
| Baltimore (c) | 3.30c |
| Boston | 3.50c |
| Buffalo | 3.15c |
| Chattanooga* | 3.85c |
| Chicago | 3.35c |
| Cincinnati | 3.80c |
| Cleveland | 3.40c |
| Detroit | 3.65c |
| Los Ang. (a) | 4.50c |
| New York | 3.50c |
| Philadelphia* | 3.40c |
| Pittsburgh | 3.35c |
| Portland (a) | 4.50c |
| San. Fran.(a) | 4.25c |
| Seattle (a) | 4.75c |
| St. Paul (a) | 3.85c |
| St. Louis | 3.60c |
| Tulsa | 4.75c |

Flats and squares 50c extra, except Tulsa, where 5.14c is quoted. (a) Rounds, hex. only.

**COLD ROLL. STRIP**

| | |
|---|---|
| Boston 0.100 in., 500 lb. lots | 5.30c |
| Buffalo | 5.65c |
| Chicago (soft) (b) | 6.15c |
| Cincinnati | 6.10c |
| Clev. (b) | 5.95c |
| Detroit | 5.40c |
| Phila. (c) | 4.85c |
| New York | 5.05c |

(b) Net base straightening, cutting, boxing 1 ton or more.
(c) Plus mill, size and quantity extras.
††Domestic bars.
*Plus quantity extras.
**Less than 25 sheets.
*†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Dependable materials are the best assurance of dependable performance

*McCormick-Deering tractor using Cast Nickel Chrome Steel Trackson tractor unit (below) manufactured by* TRACKSON COMPANY, *Milwaukee, Wis.*

# *Nickel Alloy Steel*

## assures uninterrupted performance and long service life of TRACKSON Units

THE increasing popularity of Trackson crawler units in both industrial and agricultural tractors is adequate testimony to their efficiency and ability to stand up in the hardest service.

The extent to which Nickel Alloy Steels are responsible for the durability and successful performance of Trackson units is evident from the appended list of parts. Practically the entire assembly is made of these steels which have demonstrated utmost dependability in every kind of heavy duty machinery and equipment.

Our technical files contain a wealth of data compiled from the experience of hundreds of satisfied users and fabricators of Nickel Steels. This information is at your disposal for the solution of your specific problems in the selection of materials.

Nickel
FOR ALLOY STEEL

*USES OF NICKEL ALLOY STEEL IN TRACKSON CRAWLERS*

| | |
|---|---|
| Front sprocket | Nickel Chrome Steel casting |
| Track shoe | Nickel Chrome Steel casting |
| Front sprocket axle | S.A.E. 3120 |
| Rear sprocket axle | S.A.E. 3120 |
| Spacing axle | S.A.E. 3140 |
| Bearing bolts | S.A.E. 2330 |
| Truck wheel thrust washers | S.A.E. 3140 |
| Front axle pin | S.A.E. 3140 |
| Shoe hinge pin | S.A.E. 3120 |
| Lower brake band block pin | S.A.E. 3140 |
| Brake lever shaft | S.A.E. 3140 |
| Brake lever connecting link cap screw | S.A.E. 2330 |
| Bearing bolts rear sprockets | S.A.E. 2330 |
| Truck wheel bearing bolts | S.A.E. 2330 |

SEND FOR LIST OF AVAILABLE PUBLICATIONS ON NICKEL AND ITS ALLOYS

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

## Mill Products

**Base price cents per pound f.o.b. mill, except otherwise specified. Copper and brass product prices nominal and based on 12.00c, Conn., for copper**

| | |
|---|---|
| **Sheets** | |
| Yellow brass (high) | 18.62½ |
| Copper, hot rolled | 21.75 |
| Lead, full sheets (cut ½c more) | 9.00 |
| Zinc sheet (100-lb. base) | 9.50 |
| **Tubes and Pipes** | |
| Seamless yellow brass (high) | 23.50 |
| Seamless copper | 24.12½ |
| **Rods** | |
| Yellow brass (high, full turnings) | 16.87½ |
| Naval brass | 19.00 |
| **Anodes** | |
| Copper, untrimmed | 19.25 |
| **Wire** | |
| Yellow brass (high) | 19.12½ |

## Old Metals

**Dealers' buying prices, cents lb.**

| | |
|---|---|
| **Heavy Red Brass** | |
| New York | 7.00 to 7.25 |
| Chicago | 6.50 to 7.00 |
| Cleveland | 8.00 to 8.25 |
| St. Louis | 7.50 to 8.00 |
| **Heavy Yellow Brass** | |
| New York | 4.75 to 5.00 |
| **Heavy Copper and Wire** | |
| New York | 7.75 to 8.25 |
| Boston | 8.25 to 8.50 |
| Chicago | 7.75 to 8.00 |
| Cleveland | 8.00 to 8.50 |
| St. Louis | 7.00 to 7.50 |
| **Red Brass Borings** | |
| New York | 6.50 to 6.75 |
| **Yellow Brass Tubing** | |
| Cleveland | 5.00 to 5.50 |
| **Light Copper** | |
| New York | 7.00 to 7.25 |
| Chicago | 6.50 to 6.75 |
| Cleveland | 7.00 to 7.50 |
| St. Louis | 6.75 |
| **Light Brass** | |
| Boston | 4.00 to 4.25 |
| Chicago | **4.00 to 4.25** |
| Cleveland | 3.50 to 4.00 |
| St. Louis | 4.00 to 4.25 |
| **Zinc** | |
| New York | 2.00 to **2.25** |
| Cleveland | 1.50 to 1.75 |
| St. Louis | **2.00** |
| **Aluminum** | |
| Clippings, soft, Cleveland | 12.00 to 12.50 |
| Clippings, hard, Cleveland | **8.00 to 9.50** |
| Borings, Cleveland | 5.00 to 5.50 |
| Mixed cast, Cleveland | 6.50 to 7.00 |
| Mixed cast, Boston | 5.50 to 6.00 |
| Mixed cast, St. Louis | 6.00 |

## Secondary Metals

| | |
|---|---|
| Remelt aluminum No. 12 | 13.50 |
| Brass ingots, 85-5-5-5 | 11.00 |

# Metals

**Copper Prices Mount but Later Weaken—Export Sales Heavy —Tin Demand Spotty**

**New York**—Copper has been the leader in a dizzy metal market during the past week. Buying of copper and tin was heavy at times, and good business also was done in lead. Trading in zinc remained quiet.

**Copper**—After large business at 9.50c, Connecticut, in recent weeks, producers refused to do more at this price about a week ago. With the news that producers were curtailing output further, the background of the market became distinctly stronger, and the price was bid above 10.00c. After the market had crossed the 10-cent level, however, domestic demand diminished rapidly. Foreign users had not covered their requirements so well as domestic and their demand was larger than ever when the market here advanced to 12.00c, or equivalent to 12.30c, c.i.f. European ports. Demand from abroad was several times as large as normal on Saturday and Monday, but here a little copper was offered down to 11.50c, Connecticut, with a total absence of demand. Many rumors about weakness were around the market on Monday, but later they appeared to have been exaggerated. On the other hand, some followers of the market thought it was only natural that in a quiet spell some sellers should cut the price after such a sudden rise.

**Zinc**—Prime western metal has held well around 4.35c, East St. Louis, in a quiet market. This price compares with the recent top of 4.42½c, and the recent low of 3.95c.

**Tin**—Good business was done on Straits tin some days recently under the stimulus of the price recovery in copper. But in the past day or two, the market sagged off again with lack of demand. With low consumption the statistical situation continues weak.

**Lead**—Good business was done on several days but the price has been unchanged. The stimulus in the domestic market is due largely to a swift price rise in London, and strength abroad seemed to result mostly from the strength in copper.

**Aluminum**—This market is quiet and prices unchanged.—*Daily Metal Trade.*

## Coke By-Products Market Reflects Stronger Tone

**New York**—Surplus stocks of distillates are being worked off steadily. With output curtailed the coke by-product market is becoming firmer, though prices are unchanged. Spot buying is in small lots and the total is fairly satisfactory.

Phenol is slightly more active.

## Coke By-Products

| | Spot |
|---|---|
| **Per Gallon, Producers' Plants, Tank Lots** | |
| Pure benzol | $0.21 |
| 90 per cent benzol | 0.21 |
| Toluol | 0.30 |
| Solvent naphtha | 0.25 |
| Commercial xylol | 0.25 |
| **Per Pound at Producers' Plants in 250-Pound Drums** | |
| Phenol | 0.16 to 0.17 |
| **Per Pound at Producers' Plants** | |
| Naphthalene flakes | 3.75 to 4.75 |
| Naphthalene balls | 4.75 to 5.75 |
| **Per 100 Pounds Delivered** | |
| Sulphate of ammonia | $1.90 |

Napthalene spot business has been heavier than expected and the contracting season has started. Advance buying of sulphate of ammonia is in heavier volume.

## Barge Shipments Record

Buffalo—With several fleets still to clear from here, the New York state barge canal has handled 112,000 tons of pig iron and billets to date and nearly 150,000 tons of other iron and steel shipped from Buffalo steelworks to eastern points. This is a record for all time in the movement of these commodities.

## Prices of the Week, Cents a Pound

| | Copper—— Electro delivered | Lake delivered | Casting refinery | Straits Tin New York Spot | Futures | Lead N. Y. | Lead East St. L. | Zinc St. L. | Aluminum 98-99% | Spot Antimony | Ingot Nickel |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Nov. 12 | 10.00 | 10.12½ | 9.87½ | 25.37½ | 25.75 | 5.10 | 4.95 | 4.35 | 22.90 | 7.10 | 35.00 |
| Nov. 13 | 10.50 | 10.62½ | 10.37½ | 26.37½ | 26.75 | 5.10 | 4.95 | 4.35 | 22.90 | 7.10 | 35.00 |
| Nov. 14 | 11.00 | 11.12½ | 10.87½ | 26.75 | 27.25 | 5.10 | 4.95 | 4.35 | 22.90 | 7.10 | 35.00 |
| Nov. 15 | 12.00 | 12.12½ | 11.50 | 26.75 | 27.15 | 5.10 | 4.95 | 4.35 | 22.90 | 7.12½ | 35.00 |
| Nov. 17 | *12.00 | 12.12½ | 11.50 | 26.15 | 26.62½ | 5.10 | 4.95 | 4.35 | 22.90 | 7.12½ | 35.00 |
| Nov. 18 | *12.00 | 12.12½ | 11.50 | 25.75 | 26.12½ | 5.10 | 4.95 | 4.32½ | 22.90 | 7.12½ | 35.00 |

*Producers' prices.

# Europe

**British Iron and Steel Output 15 to 20 Per Cent Under 1929—Belgian Markets Slightly**

**London**—(*By Cable*)—Iron and steel production in Great Britain continues to shrink, and no definite improvement in the markets here or on the Continent is in sight. The number of British blast furnaces operating Nov. 1 was 96, a reduction of eight in a month, and 70 less than were active a year ago. Pig iron output for October was 415,000 tons, only 10,000 tons less than in September, but 273,700 tons under the output last year.

October steel production, 512,500 tons, shows a loss of 68,000 tons from that of September, and is 377,000 tons less than in October, 1929. On the basis of ten months' production it now appears pig iron output for the year will be 6,446,500 tons, about 15 per cent less than in 1929, and steel ingots and castings will fall to 7,834,000 tons, or 20 per cent under 1929.

A more favorable showing is made in British iron and steel exports for October, which increased 64,000 tons over September, to a total of 264,370 tons. Imports amounted to 264,480 tons, or 40,650 tons more than in the preceding month.

Midland furnaces have reduced pig iron 2s 6d (61 cents) per ton to meet competition from Luxemburg in the Birmingham district. Current shipments from Middlesbrough are falling. A small number of structural firms in the Midland district are active, but on restricted orders. Continental billets are offered at £4 5s ($20.65) and bars at £5 2s 6d ($24.91), delivered. Demand for galvanized sheets and tin plate is quiet.

The tone of the market in Belgium is reported slightly improved, on better news from certain foreign sources. Domestic trade in France is active. Business in Germany is dull.

## German Steelmakers Face Lower Prices as Imports Gain and Demand Lessens

**Berlin**—The reduction of German coal prices, effective Dec. 1, has again raised the question of a cut in domestic steel prices. It has been calculated that about 30 per cent of the costs needed for the production of pig iron corresponds to coal, the percentage corresponding to crude steel being about 2.5 per cent.

Notwithstanding these facts, at the recent meeting of the German raw steel association nothing was officially said about the necessity for a reduction of steel prices, although it is expected that the German government will shortly become interested in this question. In the meantime, imports of foreign steel are growing, whereas the needs of German customers remain limited.

Recent reports of some of the leading producers make an unsatisfactory showing. The Kloeckner-Werke A.G. has paid a dividend of only 6 per cent for the past fiscal year, compared with 7 per cent a year before. This concern's production of pig iron, raw steel and finished products has decreased during the past year, only the output of coal and coke having increased, but these increased tonnages had to be taken on stock.

With regard to the question of a cut in steel prices, President Kloeckner states that such an action would only reduce profits without reviving sales. The Hoesch Iron & Steel Works Co. is expected to distribute a dividend of only 6 per cent, against 7 per cent for the previous year, and Friedrich Krupp A.G. is expected to pass its dividend.

Demands from consumers are restricted as a result of unfavorable occupation of various lines of business. Machine-makers now are operating at about only half capacity, and shipyards, which have been trying to get a state subsidy, do not appear to have succeeded in this direction.

In export trade, shipments advanced from 337,680 metric tons in August to 368,137 tons in September, but for the first nine months of this year they amounted to 3,749,408 tons, against 4,370,978 tons in the corresponding period of last year. Although the general tendency of German industry is to increase its export sales and thereby try to make up for reduced sales at home, steel business has not recovered correspondingly.

Quotations for billets have receded to about £3 8s ($16.55). German makers have been asking £4 2s ($19.95) for merchant bars and £4 18s ($23.85) for ship plates. Sales to South America have remained restricted as previously, but sales to South Africa and the Far East have improved.

## World Depression Factors React on French Trade

**Paris**—There is no change in the condition of the French iron and steel market, but it is generally felt that the depression which now has spread over most countries of the world is beginning to react on French trade, particularly in export business.

One disquieting factor is that wholesale prices tend to decrease, while retail prices do not show signs of following the movement. This is ascribed to the fact that agricultural products are at a high price, mainly because the government has been following a policy of high-priced wheat, assisted by high tariff.

It is not likely that these conditions will change, unless activities of the various industries diminish sufficiently to cause unemployment. Should this state of affairs be reached, the unemployment would first touch foreign labor, which is considerable in France.

The iron and steel industry still enjoys fair activity, mainly due to the construction of houses, and also to large schemes of public works. There is also some talk of a coming loan for development of French colonies, and this eventually would bring considerable demand for iron and steel material. With this outlook, the general sentiment is hopeful, at any rate so far as domestic business is concerned.

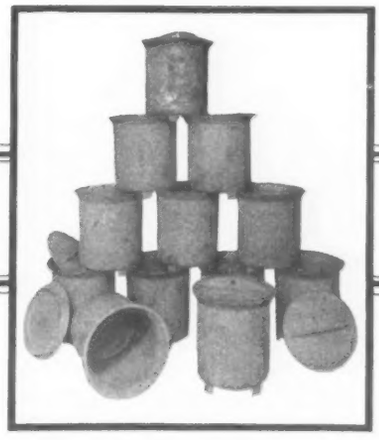
Demand for coal and more parti-

# 5850 HOURS *of Service* FROM A PYRASTEEL LEAD POT

THE METALLURGIST of the Delaware Tool Company, Wilmington, Del., recently reported that a Pyrasteel lead pot had burned out after 5850 hours of service. • Ordinary pressed steel and cast iron pots previously used had lasted about 250 hours. It would have been necessary to install 23 of them to equal the life of this one Pyrasteel pot. • For parts subjected to high temperatures, Pyrasteel is far more economical than ordinary metals. • Pyrasteel is made and priced according to the temperatures and service required, and for heat ranges from 1000° to 2200°.

**CHICAGO STEEL FOUNDRY CO.**
MAKERS OF ALLOY STEEL FOR OVER TWENTY YEARS
AGENTS IN NEW YORK, PHILADELPHIA, INDIANAPOLIS, TULSA

**THE COST PER HEAT HOUR IS THE MEASURE OF PYRASTEEL SERVICE**



Specially designed Pyrasteel pots for a large electric company.

cularly for coke, is decreasing and stocks are augmenting. There is little change in the pig iron market, but producers of hematite are allowed to quote their own prices to meet foreign competition, with the result that in certain regions the price is well below official quotations.

The domestic syndicates have held their meetings and the only change in prices was a decrease in the extra fixed for open-hearth steel grade in semifinished steel and structural steel. Members of the plate and sheet syndicate have decided to limit activities to plates and sheets over 3 millimeters. The market for lighter sheets is free. Prices of merchant steel and rolled products are subject to competition and with a general tendency to drop.

Some orders for reinforced concrete bars have been taken at 500 francs ($19.50), and an order for straightened wire rods has been taken at 480 francs ($18.70). Merchant bars range from 520 to 550 francs ($20.30 to $21.50) in the east of France and from 540 to 570 francs ($21.15 to $22.25) in the north.

The wire products market is deteriorating. Prices have been maintained or a long time, but the decision of the wire rod syndicate suddenly to reduce the basis price by 65 francs ($2.55) per ton as from Oct. 1 and by 40 francs ($1.60) for orders taken during September has occasioned a considerable drop in wire product prices. Demand for barbed wire is low, and there is keen competition in barbed wire and wire nails. Negotiations continue for organization of a wire products syndicate.

## Luxemburg Output Rises

**Brussels**—The output of pig iron in Luxemburg in September was lower than in August but above June and July. The tonnage of steel ingots and castings produced in September was above that of August. Comparative figures follow, in metric tons:

| Mon. ave. | Furnaces on last day | Pig iron | Steel ingots and castings |
|---|---|---|---|
| 1913 | .... | 212,320 | 111,355 |
| 1927 | 39 | 227,710 | 200,595 |
| 1928 | 38 | 230,840 | 214,315 |
| 1929 | 37 | 242,175 | 225,605 |
| 1930 | | | |
| Jan. | 37 | 249,875 | 216,315 |
| Feb. | 36 | 231,326 | 214,857 |
| March | 35 | 248,983 | 225,285 |
| April | 32 | 221,209 | 198,250 |
| May | .... | 212,168 | 189,027 |
| June | 27 | 178,203 | 150,267 |
| July | 27 | 185,043 | 164,889 |
| August | .... | 197,242 | 177,270 |
| Sept. | 26 | 190,225 | 186,448 |

## French Pig Iron Drops

**Paris**—Output of pig iron in France in September reached the lowest figure of the year. Output of steel ingots and castings in September gained over August and was composed of 745,000 tons of ingots and 22,000 tons of steel castings. Comparative figures follow, in metric tons:

| Mon. ave. | Act. Fur. on last day | Pig iron | Steel ingots and castings |
|---|---|---|---|
| 1913 | 131 | 433,940 | 390,580 |
| 1927 | 142 | 774,785 | 689,610 |
| 1928 | 153 | 841,415 | 782,995 |
| 1929 | 156 | 870,000 | 805,500 |
| 1930 | | | |
| Jan. | 156 | 875,000 | 800,000 |
| Feb. | 154 | 815,000 | 772,000 |
| March | 152 | 898,000 | 848,000 |
| April | 153 | 854,000 | 787,000 |
| May | 154 | 899,000 | 853,000 |
| June | ..... | 841,000 | 753,000 |
| July | 147 | 861,000 | 790,000 |
| August | 143 | 845,000 | 775,000 |
| Sept. | 140 | 801,000 | 767,000 |

## French Ore Stocks Grow

**Paris**—Output of iron ore in France in August fell from the July production and stocks at the mines Aug. 31 showed an increase. Comparisons follow, in metric tons:

| Mon. ave. | Production | Stocks at end of month |
|---|---|---|
| 1913 | 1,826,500 | ..... |
| 1927 | 3,723,200 | ..... |
| 1928 | 4,109,780 | ..... |
| 1929 | 4,252,470 | ..... |
| 1930 | | |
| Jan. | 4,567,511 | 2,680,461 |
| Feb. | 4,132,962 | 2,779,536 |
| March | 4,336,932 | 2,851,347 |
| April | 4,008,353 | 2,836,072 |
| May | 4,231,886 | 2,898,086 |
| June | 3,897,000 | 2,875,098 |
| July | 4,254,281 | 3,107,223 |
| August | 4,059,926 | 3,306,086 |

# Current Iron and Steel Prices of Europe

**Dollars at Rates of Exchange, November 17**

### Export Prices f. o. b. Ship at Port of Dispatch—By Cable

| | *British* Gross Tons U. K. Ports | £ s d | *French* Metric Tons Channel Ports | £ s d | *Belgium and Luxemburg* Metric Tons Channel Ports | £ s d | *German* Metric Tons Rotterdam or North Sea Port | £ s d |
|---|---|---|---|---|---|---|---|---|
| **PIG IRON** | | | | | | | | |
| Foundry No. 3, Silicon 2.50-3.00 | $15.43 | 3 3 6* | $12.15 | 2 10 0 | $12.15 | 2 10 0 | $13.37 | 2 15 0 |
| Basic-bessemer | 15.92 | 3 5 6† | 11.91 | 2 9 0 | 11.91 | 2 9 0 | 13.37 | 2 15 0 |
| Hematite, Phosphorus 0.02-0.05 | 17.25 | 3 11 0 | ..... | ..... | ..... | ..... | 17.74 | 3 13 0 |
| **SEMIFINISHED STEEL** | | | | | | | | |
| Billets | $27.95 | 5 15 0 | $16.04 | 3 6 0 | $16.04 | 3 6 0 | $16.52 | 3 8 0 |
| Wire rods | 41.31 | 8 10 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 | 29.16 | 6 0 0 |
| **FINISHED STEEL** | | | | | | | | |
| Standard rails | $40.10 | 8 5 0 | $31.59 | 6 10 0 | $31.59 | 6 10 0 | $32.08 | 6 12 0 |
| Merchant bars | 1.68c | 7 15 0 | .88c | 4 0 0 | .88c | 4 0 0 | .91c | 4 2 6 |
| Structural shapes | 1.68c | 7 15 0 | .78c | 3 11 0 | .78c | 3 11 0 | .81c | 3 14 0 |
| Plates, ship, bridge and tank | 1.79c | 8 5 0 | 1.02c | 4 13 0 | 1.02c | 4 13 0 | 1.05c | 4 15 0 |
| Sheets, black, 24 gage | 1.90c | 8 15 0 | 1.80c | 8 3 9 | 1.80c | 8 3 9 | 1.98c | 9 0 0 |
| Sheets, galvanized, 24 gage, corrugated | 2.52c | 11 12 6 | 2.35c | 10 13 9 | 2.35c | 10 13 9 | 2.64c | 12 0 0 |
| Bands and strips | 2.17c | 10 0 0 | .99c | 4 10 0 | .99c | 4 10 0 | 1.05c | 4 15 0 |
| Plain wire, base | 2.06c | 9 10 0 | 1.29c | 5 17 6 | 1.29c | 5 17 6 | 1.33c | 6 1 0 |
| Galvanized wire, base | 3.04c | 14 0 0 | 1.60c | 7 5 0 | 1.60c | 7 5 0 | 1.61c | 7 6 0 |
| Wire nails, base | 2.39c | 11 0 0 | 1.32c | 6 0 0 | 1.32c | 6 0 0 | 1.32c | 6 0 0 |
| Tin plate, base box 108 pounds | $ 4.13 | 0 17 0 | ..... | ..... | ..... | ..... | $ 8.51 | 1 15 0 |

### Domestic Prices at Works or Furnace—Last Reported

| | | | Francs | | Francs | | Marks | |
|---|---|---|---|---|---|---|---|---|
| Foundry No. 3 Pig Iron, Silicon 2.50-3.00 | $15.43 | 3 3 6 | $19.25 | 490(2) | $16.18 | 580 | $19.78 | 83 |
| Basic pig iron | 15.80 | 3 5 0 | 20.63 | 525(1) | 12.83 | 460 | 21.09 | 88.50 |
| Furnace coke | 3.16 | 0 13 0 | 6.60 | 168 | 5.30 | 190 | 5.12 | 21.50 |
| Billets | 27.95 | 5 15 0 | 21.62 | 550 | 17.02 | 610 | ‡8.00 | 117.50 |
| Standard rails | 1.79c | 8 5 0 | 1.46c | 810 | 1.61c | 1,240 | 1.47c | 136 |
| Merchant bars | 1.68c | 7 15 0 | .98c | 545 | .96c | 335 | 1.48c | 137 |
| Shapes | 1.84c | 8 10 0 | 1.12c | 620 | .94c | 725 | 1.45c | 134 |
| Plates, ship, bridge and tank | 1.95c | 9 0 0° | 1.46c | 810 | 1.11c | 850 | 1.65c | 153 |
| Sheets, black, 24 gage | 2.28c | 10 10 0 | 2.63c | 1,460 | 2.41c | 1,850 | 1.36c | 126 |
| Sheets, galvanized 24 gage, corrugated | 2.52c | 11 12 6 | 3.74c | 2,075 | 2.73c | 2,100 | 3.67c | 340 |
| Plain wire | 2.06c | 9 10 0 | 1.76c | 975 | 2.15c | 1,650 | 2.34c | 217 |
| Bands and Strips | 2.17c | 10 0 0 | 1.27c | 705 | 1.43c | 1,100 | 1.72c | 159 |

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 13s 0d ($3.16) f. o. b. Ferromanganese £12 5s 0d ($59.54) delivered Atlantic seaboard, duty-paid. German ferromanganese £12 5s 0d ($59.54) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel. French, Belgian, Luxemburg, and German are for basic-bessemer steel.

# Machinery

RESUMPTION of manufacturing activity in the automobile industry attending introduction of new models has been marked by a few machine tool orders of decidedly substantial character, and by a wave of inquiry. Full realization of the sharp competition facing the industry seems to have come suddenly to manufacturers of vehicles as well as of parts and accessories. They are listening with attention to descriptions of new machine tools which will cut production costs without compromising quality. Some machine tool builders and dealers have secured foot holds on 1931 budgets by immediate delivery of new equipment subject to billing in 90 days.

**New York**—The most encouraging news of the week comes from Detroit. Two automobile builders are reported to have bought about $275,000 worth of grinding eqnipment. A Pittsburgh steel interest is also reported to have placed grinding equipment to the value of close to $70,000. The bulk of this business is reported purchased from eastern builders. These orders are the bright spots in an otherwise drab market.

While inquiry for machine equipment is reported slightly better in some quarters, notably from the metalworking field, there has been no pronounced improvement in either orders or inquiry. Tentative budgets have been prepared by some of the larger buyers, but action on machinery requirements is likely to depend upon resumption of demand for products manufactured. Meanwhile sales are limited to one or two units at a time, generally based on engineering details, often of a semiautomatic nature, which permit lower production costs or increased output. Railroads continue to buy sparingly. Ball bearing plants in the East are still on curtailed schedules. Machine building plants are also operating with skeleton forces.

The navy department is taking bids this week on a small list of tools for its yard shops in both the East and West. One or more tools are to be bought for most of the yards. Two engine lathes will be taken for Hampton Roads and motor-driven drills for Philadelphia. The city of New York is taking figures on machine tool and shop equipment for two technical high schools.

**Worcester, Mass.**—Government specifications being released by Washington for Navy yard equipment are giving the market a slight stir. Rice, Barton & Fales have closed a contract to build paper making machinery for the new plant of the Weyerhaeuser Timber Co. of Longview, Washington. The contract involves several hundred thousands of dollars. The establishment of the new plant requires other machinery on which bids have been opened. Grinders activity is quiet.

**Pittsburgh**—The machinery market continues extremely dull, recent sales volumes as reported by some interests being the lowest of the year to date. Inquiry also is quiet and pending business mostly involves individual tools. Sentiment in the industry, however, has improved and belief is prevalent that activity will revive after the turn of the year. Orders from the Westinghouse Electric & Mfg. Co. are confined to small lots. Pittsburgh Screw & Bolt Corp. is purchasing some special equipment to be installed at its Neville Island plant for the production of its steel propeller.

**Cleveland**—While the resumption of active operations in some of the large automobile plants has not as yet been reflected in improved machine tool business in the Cleveland district, it has been reflected in a distinct improvement in morale of some of the machine tool builders. The more optimistic attitude also has been encouraged by an increasing number of inquiries. Some of the dealers and builders have succeeded in getting an actual foothold on 1931 equipment appropriations by selling machinery during the past week subject to payment in 90 days. In such cases the account generally is being handled through a finance company or bank, in such a way as to give the seller some immediate cash. Even if the cash is not needed, the plan has the merit of giving employment.

The joint exposition of the Motor and Equipment association and the National Standard Parts association this week has brought to Cleveland several thousand men, among whom are many live prospects for production metalworking equipment. In an informal way this exposition is beneficial to local machine tool interests by giving machine tool dealers and builders a favorable opportunity to get together with users in whom realization of keen future competition has aroused active interests in equipment which will improve quality and at the same time cut production costs of automotive parts. A development which is being followed with close attention by machine tool men is the recent merger between the Addressograph Co., Chicago, and the American Multigraph Co., Cleveland, with attending possibility of expansion in manufacturing operations in Cleveland.

**Chicago**—Occasional reports of replacement and modernization programs for next year again have bestirred some cheerful sentiment in the face of general prospects of light sales volumes in the next few months. An automobile builder north of here is reported to have under consideration changes in manufacturing methods that would call for a large list of machine tools. A half dozen large shop tools have been placed in the Chicago district in the last few days, including a milling machine, while most of the jobbing machine shops are retrenching. It is stated the order for about 12 items to be purchased soon by Procter & Gamble Co., Cincinnati, will be for the company's Pacific coast plant. Machine tool parts and accessory orders are fair. Several manufacturers of welders have adjusted prices amounting to increases of about 2 per cent on several sizes. A large number of light production tools were auctioned at receivership sale Nov. 15 as a part of the former equipment of the Chicago Wire Chair Co., 121 West Ontario street Chicago. A few fresh single-item inquiries for new tools have appeared in the last few days.

## Change Glancy Control

Control of Glancy Malleable Corp., Waukesha, Wis., has passed principally to L. A. Williams, vice president, and L. D. Harkrider, secretary and treasurer, through a revamping of the corporation's capitalization.

A. R. Glancy, also a vice president and director of General Motors Corp., has been in active charge of the business with the former two men since the corporation's formation in 1923. Mr. Glancy carries out his original intention to have the men who helped him build his organization become the majority stockholders.

Glancy Malleable Corp. plant, built in 1893, was for a time leased to the Samson Tractor division, General Motors Corp. Mr. Glancy does not relinquish his chairmanship of the board and continues as active general directing head of the business.

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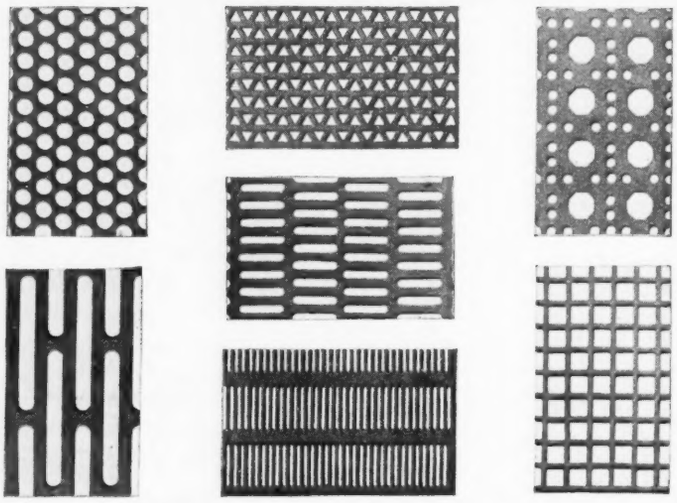

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# Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

## New England

HARTFORD, CONN.—Board of contract and supply will receive bids until Dec. 9 for a pumping station to be constructed in connection with a flood project. R. Clark, city hall, is engineer. Estimated cost, $145,000.

HARTFORD, CONN.—New England Electric Co., 103 Allyn street, proposes to construct a 3-story service unit, 70 x 90 feet, at Spring street and Church street extension. Approximate cost, $75,000. Westcott & Mapes, 139 Orange street, New Haven, Conn., have plans.

BEVERLY, MASS.—Atlas Coil Spring Co. is a new firm here, planning to establish a plant for the manufacture of steel springs.

BOSTON—New Method Die & Cut-Out Co., 30 Cross street, Cambridge, is inquiring for a 24-inch exhaust fan, 550 volts, 3-phase, 60-cycle.

BOSTON—H. Bettoney, 106 Chestnut street, Jamaica Plain, Boston, is in the market for a hand saw, circular saw, sander, shaper and jointer, with alternating current motors.

BOSTON—W. H. Crane, 1 Hayward street, Cambridge, proposes the construction of a 1-story, 60 x 200-foot warehouse unit, to be erected at Binney and Rogers streets from private plans. Estimated cost, $40,000.

CAMBRIDGE, MASS.—Massachusetts Institute of Technology has started plans for the construction of a physics and chemistry laboratory. Cost is estimated at $2,500,000.

SPRINGFIELD, MASS.—Moore Drop Forging Co. will build a 1-story plant addition at a cost of about $17,000.

SPRINGFIELD, MASS.—Ames Sword Co., Thomas H. Boeshar president, proposes to transfer operations to a new location. Company recently was reorganized.

WATERTOWN, MASS.—J. W. Greer Co., 119 Windsor street, Cambridge, Boston, has started construction of a plant for the manufacture of bakers' and confectioners' machinery and parts. Cost is estimated at $100,000, with equipment.

WESTFIELD, MASS.—Martin Trailer Co., manufacturer of trailers and wheels, recently noted as planning a plant addition, has completed plans and will start preliminary work. Cost is estimated at $40,000. (Noted July 24.)

MELVILLE, R. I.—Bureau of yards and docks, navy department, Washington, as a part of its construction program here will purchase about $88,000 worth of power equipment.

## New York

ALBANY—Matson Mfg. & Wire Co., H. I. Matson president, Joliet, Ill., is establishing a branch plant in West Albany, employing about 20 workers. Further expansion is planned after operations are under way.

BUFFALO—S. & E. Heating & Sheet Metal Works, 32 Roetzer street, is having plans prepared for a 1-story plant addition to be used as a metal and tinworking shop.

LONG ISLAND CITY — General Bronze Corp., Julius H. Barnes president, has plans for a new plant to replace three smaller units.

NEW YORK—H. Specialty Mfg. Corp. has been incorporated by Porte & Porte, Jamaica, N. Y., to deal in metals.

NEW YORK—Toonkel & Leibowitz has been incorporated with $15,000 capital by Hauben & Fishman, 305 Broadway, to deal in metals.

NEW YORK—American Lamp Co. has been incorporated with $20,000 capital by M. G. Siegel, 1440 Broadway, to make electrical equipment.

NEW YORK—B. & W. Mfg. Co. has been incorporated by J. J. Hammer, 151 West Fortieth street, to make sewing machines.

NEW YORK—Empire X-Ray Clinic has been incorporated by Holman & Holman, 621 Fifth avenue, to deal in X-ray machinery.

NEW YORK—Phelps-Langdon Appliance Corp. has been incorporated with 100 common shares by J. L. Sheppard, 80 Maiden Lane, to make auto temperature indicators.

NEW YORK—Phelps Dodge Corp., 99 John street, is reported to plan expansion of a subsidiary, National Electric Products Corp., New York. Inca Mfg. Co., Los Angeles, division of the National Electric Company, has moved to larger quarters at 1547 Venice boulevard, Los Angeles, after purchasing the S. & L. Mfg. Co. National Electric company makes copper wire, cable and tubing. Inca company makes coils and radio parts.

POUGHKEEPSIE — Waterproof Super Metal Products Co. has been incorporated with $250,000 capital by C. Huster.

*FILLING AN OLD CANAL*

*When Syracuse, N. Y., decided to fill in part of the old Oswego canal to build a boulevard along the bank of Lake Onondaga a Link-Belt 1-yard chain-crowd gas shovel was put at work. Red shale containing many boulders made hard digging.*

## Pennsylvania

BANGOR—Plant of the Reichard Mfg. Co. recently was damaged by fire. Loss is estimated at $20,000. Company manufactures garden implements.

MIDLAND — Treadwell Engineering Co. has started construction of a 1-story plant addition, 75 x 440 feet. Cost, with equipment, is estimated at $85,000. Company manufactures steel plates and steel barges and towboats.

PHILADELPHIA—Pneumatic Equipment Co. has been incorporated with $25,000 capital by S. Elverson Smith, 23 South High street, West Chester, Pa., treasurer, to manufacture and deal in pneumatic equipment, tools, appliances and accessories.

PHILADELPHIA—Aramingo Welding Co. has been incorporated with $5000 capital by J. Kyle Dudley, Bustleton pike and Tomlinson road, treasurer, to engage in the business of machinists, brass founders, toolmakers, and welders.

PITTSBURGH—R. M. Gordon & Co. has been incorporated with 600 no par shares by John L. Bailie, 250 Barr avenue, Crafton, Pa., to manufacture and deal in machinery, accessories and supplies.

PITTSBURGH — Alloy Welding & Mfg. Co., 1115 Metropolitan street, whose incorporation recently was noted, advises through J. J. Donahue that the company has sufficient equipment for present needs, but is considering construction of a plant addition next year. Company is successor to Pittsburgh Products Supply Co. (Noted Oct. 23.)

## New Jersey

ASBURY PARK—Richard V. Dorbeck Tool Mfg. Co. has been incorporated with $100,000 capital by John R. Phillips Jr., to manufacture mechanical appliances.

CAMDEN—Reeves Stove & Foundry Co., Twenty-second and Hayes streets, whose foundry recently was noted as having been damaged by fire, proposes to rebuild the unit. (Noted Oct. 9.)

NEWARK—Handy Rule Tool Co. Inc. has been incorporated with $100,000 capital by L. P. Kristeller, 810 Broad street, to manufacture tools.

NEWARK—Stirrup Mfg. Co., 397 Market street, has leased a plant at 250

South street. Company manufactures metal novelties and ice cream freezers.

PATERSON—Watson Flagg Machine Co. has been incorporated with $250,000 and 5000 common shares by United States Corporation Co., New Brunswick, N. J., to operate a general machine shop.

ROSELLE PARK—Modern Products Corp. has been incorporated with $100,000 capital by Wilbur D. Houston, to manufacture machinery.

TRENTON—Trenton Equipment & Supply Co. has been incorporated with 2500 common shares by Fishberg & Fishberg, to deal in machinery.

## Ohio

CLEVELAND—Lake Erie Metal Co. has been incorporated by Abraham Kollin, 445 Society for Savings building, to deal in metals.

CLEVELAND—A. J. Penote Co., 20100 St. Clair avenue, manufacturer of metal conduits, has let general contract to George L. Craig Inc., 4614 Prospect avenue, for a 40-foot plant addition. Paul Schmidt, 4500 Euclid avenue, is architect.

CLEVELAND—Bryant Heater & Mfg. Co., A. C. Orth secretary, 17825 St. Clair avenue, will expand its plant capacity to 200,000 square feet, approximately doubling present space. Site of five acres has been acquired.

FINDLAY—Plant of the Hub Alloy Casting Co. recently was damaged slightly by fire. Estimated loss, $5000.

MT. GILEAD—Union Power Co., Register building, has acquired a site near here for a new power unit. Diesel engines will be installed.

TOLEDO—Fox Electric & Mfg. Co., recently organized, care of Fraser, Hiett, Wall & Effler, Home Bank building, plans to establish a plant for the manufacture of electrical specialties. John J. Hendrick and John M. Zuber are interested.

## Indiana

INDIANAPOLIS—Plant of the Enterprise Iron & Furnace Co., Twenty-fourth and Yandes streets, recently was damaged slightly by fire.

## Michigan

DETROIT—Department of public works will award contract soon for a pumping station and for two pumps of 2700 gallons per minute capacity.

DETROIT—Dee Wite Inc., 1016 Book building, has been incorporated with 50,000 no par shares by Joseph B. Lodge, to build and sell vessels.

DETROIT—Public lighting commission has approved plans for the construction of a power substation on Phillip avenue. Estimated cost, $60,000.

DETROIT — Automotive Accessories Co. has been incorporated with 3150 no par shares by Charles H. Hatch, 73 West Forest street, to manufacture and deal in parts of automobiles, motor boats, aircraft, and automotive vehicles.

JACKSON—Chamber of commerce is reported to be in contact with interests proposing to establish a plant here for the manufacture of airplanes. Interests may refinance Issoudin Aircraft Corp., which recently constructed a test plane made from an aluminum alloy produced by Sheet Aluminum Corp., Jackson.

## Illinois

BENTON—Safety Mining Co., 307 North Michigan boulevard, has established a plant here under the management of Frank H. Needland, for the preparation of gas-filled cartridges used in mining. Later the company may install a plant here for the manufacture of the entire product.

CHICAGO—Avildsen Steel & Tool Co. has leased a 6-story unit, 100 x 200 feet, at 100 South Jefferson street, from the Valley Forge Steel & Tool Co., 622 West Monroe street.

CHICAGO—A. B. C. Range Burner Corp., 1823 Carroll avenue, has been incorporated with $10,000 capital by Ryan, Condon & Livingston, 231 South LaSalle street.

CHICAGO—First Caisson Machinery & Boring Co., 214 West Ohio street, has been incorporated with $20,000 capital by Elmer E. Jackson, 33 South Clark street, room 1441, to manufacture and deal in machinery.

CHICAGO—Grigsby Grunow Co., 2021 North Austin avenue, has awarded contract to E. Nelson Construction Co., 3253 North Kedzie avenue, for a 2-story boiler unit, 45 x 52 feet. Cost is estimated at $60,000.

CHICAGO — Wabash railroad, St. Louis, has a permit for the construction of a roundhouse, 40 x 150 feet, at 2900 West Seventy-ninth street. Contract has been awarded to H. A. Peters Co., 19 South La Salle street. Cost is estimated at $33,000.

MONTPELIER—Plant formerly occupied by the National Steel Castings Co., now owned by Max Zeigler, Muncie, Ill., may be restored to operation by local interests about Jan. 1.

ROCKFORD — Auto-Matic Floor Waxing Machine Co., North Second street road, has been incorporated with $25,000 capital by Large & Reno.

## Southern States

DOTHAN, ALA.—Dothan Machine & Ornamental Iron Works Co. has been incorporated by Arthur Knight and Pearl Page.

WILMINGTON, DEL.—Stewart Furnace Corp. has been incorporated with $500,000 capital by Corporation Trust Co. to deal in iron and steel.

WILMINGTON, DEL. — American Automatic Photo Weigh Co. Inc. has been incorporated with $100,000 and 5000 common shares by Corporation Trust Co., to deal in photographic weighing machines.

DAYTONA BEACH, FLA.—Reversible Map & Chart Co., post office box 1121, is in the market for a punch press.

FERNANDINA, FLA.—Fernandina Boat Building Co.'s plant recently was damaged by fire. Loss is estimated at $13,000.

HOLLYWOOD, FLA.—Plant of the Hollywood Machine & Iron Co. recently was damaged by fire, with loss estimated at $65,000, partially insured.

JACKSONVILLE, FLA. — Sterling Railway Specialties Co. Inc. has been incorporated with $225,000 capital by J. H. Rice, 728 Gilmore street, to deal in steel and iron products.

LAKE PLACID, FLA.—City council proposes to develop an airport. George T. Berger, aviation engineer, Tampa, Fla., is preparing plans.

PENSACOLA, FLA.—Bureau of yards and docks, Washington, will call for bids for improvements at the naval air station here. Estimated cost, $135,000.

LOUISVILLE, KY.—Board of education is considering the construction of a $250,000 addition to the Theodore Ahrens trade school, 546 South Sixth street.

NEW ORLEANS—Orleans parish school board is having plans drawn for a trades school. Cost is estimated at $400,000.

BALTIMORE — City, William F. Broeing mayor, will construct a municipal airport. Bonds to the amount of $2,500,000 have been voted.

FRUITLAND, MD.—John H. Dulany & Son are interested in letting the manufacture of a capping machine for capping strawberries.

GLENDON, N. C.—City is considering the purchase of a 200 to 250-horsepower diesel engine.

WINSTON-SALEM, N. C.—Richard Nissenn proposes to develop Charles field, to be renamed Twin City airport. Hangars will be constructed.

ALLENDALE, S. C.—Santee Heading Corp. will rebuild its plant, recently damaged by fire. Mill building and storage unit will be erected. R. D. Morse is plant superintendent.

BRISTOL, VA.—City has awarded contract to Bristol Steel & Iron Works Inc., successor to Twin City Boiler Works, for construction of a hangar.

CLIFTON FORGE, VA.—Chesapeake & Ohio railway, Richmond, Va., advises through C. W. Johns, chief engineer, that improvements recently noted will include remodeling the transfer pit table, installation of a new electric transfer table, extension of erecting shop and lengthening of six erecting pits, remodeling planing mill to secure housing for tank repair work, and changes to minor facilities. (Noted Oct. 30.)

WHEELING, W. VA.—National Coupling & Fitting Co., care of W. H. Truschel, 1530 Market street, whose incorporation recently was noted, plans to operate a plant for the manufacture of couplings, bends and fittings. (Noted Oct. 23).

## Missouri

EMINENCE—Shawnee Copper Mining Co. plans to construct a concentrating mill. Cost is estimated at $100,000.

JOPLIN—Shirley D. Mining Corp.

has been incorporated by Fred A. Carmody, Fifth street, Royal Heights, Joplin.

KANSAS CITY—Kansas City Electrotype Co., Robert H. Smallfeldt president, 616 Wyandotte street, will erect a 2-story plant at Seventh and Wyandotte streets. Cost is estimated at $40,000.

SPRINGFIELD—International Harvester Co. of America, 606 South Michigan avenue, Chicago, proposes to build a warehouse unit here, and is having sketches made. Estimated cost, $100,000.

ST. LOUIS—St. Louis university, care of R. Johnston, 221 South Grand boulevard, will receive bids until about Dec. 15 for the construction of a 14-story hospital, to include power plant. Estimated cost, $1,000,000. Unit is to be built at Grand boulevard between Vista and Rutgers streets. Study & Farrar, 1363 Arcade building, and A. J. Widmer, 1217 Fullerton building, are associate engineers.

## Arkansas

SILOAM SPRINGS—J. W. Sloan, care International Supply Co., Tulsa, Okla., is taking bids on construction of a power plant to cost $200,000 with turbine and generator equipment. Victor Cochrane, Wright building, Tulsa, Okla., is engineer in charge.

## Oklahoma

MANGUM—City plans to purchase a booster pump and equipment for waterworks improvements. Cost is estimated at more than $100,000.

OKLAHOMA CITY—Crump Refineries, 1100 East Reno street, has awarded contract to W. L. Beavers, Perrine building, for construction of a pumping plant.

OKLAHOMA CITY—Fluid Packed Pump Co., Twenty-ninth and Santa Fe streets, has let contract for the construction of a 2-story plant, 24 x 136 feet. Cost is estimated at $50,000.

TULSA—City, George Watkins mayor, proposes to purchase a field and develop an airport.

TULSA—Nicholson Clock Co., Sand Springs road, plans construction of a machine shop addition, 40 x 95 feet. Contract has been awarded to J. R. Forner Construction Co., Ritz building.

## Texas

DALLAS—Texas & Pacific & Northern railway, subsidiary of Texas & Pacific railway, E. F. Mitchell chief engineer, has started plans for repair shops, machine shops and engine houses to be located at various points on a new line extending 333 miles from this locality. Cost will total about $250,000.

FT. WORTH—Bowdrey & McKinley Iron Works will erect a plant addition, 30 x 50 feet, at 901 Throckmorton street.

HOUSTON—Hastings Oil Tool Co. has been incorporated with $125,000 capital by J. W. Metzler, 1203 Wichita street.

HOUSTON—International Iron Corp., 2009 Quitman street, will build a pipe warehouse, 50 x 150 feet.

LOCKHART—Plant of the Lockhart Culling Machine Co., manufacturer of cotton seed culling machinery, recently was damaged by fire, with loss estimated at $15,000. Company is reported to plan to rebuild.

PERRYTON—City, C. E. Forbes mayor, proposes to build a hangar and machine shop at the municipal airport recently noted as planned. (Noted Oct. 9.)

PORT ARTHUR—City is reported to plan construction of an airport and seaplane base. J. W. O'Neal is mayor.

SAN ANTONIO—Ralph Candler, San Antonio and New York, has started organization of a company to manufacture radios and radio parts. Maurice J. Francill is to be associated as chief engineer. Sites are being investigated here and at Dallas, Ft. Worth, Waco and Wichita Falls.

## Wisconsin

BEAVER DAM—Beaver Sheet Metal Works will move into new quarters at 307 South Spring street about Dec. 1. Increased floor space is available. A. A. Parker and A. E. Nightingale are proprietors.

MILWAUKEE—A. E. Martin Foundry & Machine Co., 705 Park street, recently sustained damage to its plant by fire. Loss is estimated at $50,000. Principal damage was confined to the core room.

MILWAUKEE—Ampco Metal Inc. will use increased capital to expand its plant for the production of metal in the form of sheet, rod, wire and forgings. First unit will be a bronze rolling mill and second will be a drop forge plant. Company formerly was named American Metal Products Co. C. J. Zaiser is president.

OAKFIELD—Romort Mfg. Co., whose plant recently was noted as having been damaged by fire, advises through F. E. Willard, secretary, that the damage was confined to the heating plant, brass foundry and vulcanizing department. Parts needed in manufacturing are being secured from other plants, and the damaged units will not be rebuilt before next spring. (Noted Nov. 13.)

WAUKESHA—Fawick Mfg. Co. has been incorporated with $300,000 capital to manufacture a new clutch and other automotive parts. Thomas H. Fawick is president and S. A. Perkins, secretary of the Waukesha Motor Co., is vice president. Production will start in the local plant of Hein-Werner Motor Parts Co. Clutch unit is adapted to industrial gas engines made by the Waukesha Motor Co.

WYOCENA—Wisconsin Power & Light Co., Madison, Wis., will build a hydroelectric plant here.

## Minnesota

McGREGOR — General Minnesota Utilities Co., Pine City, Minn., plans to build a power plant here at a cost of about $80,000.

## Colorado

DENVER—Standard Steel Stamping Co., 130 West Louisiana avenue, is in the market for combination beading and flanging machine for 20-gage drums, 16 inches in diameter and 20 inches long; power squeezer, double seamer, and horn press, of Bliss or other make.

## Pacific Coast

HERNDON, CALIF.—San Joaquin Light & Power Corp., Power building, Fresno, Calif., proposes to build a steam-operated generating plant here at a cost of about $4,000,000. Capacity will be 50,000 kilowatts. H. K. Fox of the San Joaquin company is engineer.

LOS ANGELES—Cycloplane Co. Ltd. has been organized by Richard Myhres and O. L. Woodson, to manufacture powered gliders.

LOS ANGELES—Western Metalcrafts Co., 2033 West Sixteenth street, has let contract for a plant, 100 x 100 feet, and an office, 50 x 60 feet. Cost, with equipment, $50,000.

LOS ANGELES—United States Porcelain Enamel Co., 4635 East Fifty-second drive, Maywood, Los Angeles district, is building a plant addition, 50 x 180 feet. Gustav Oesterle is president.

LOS ANGELES—Los Angeles Lighting Fixture Supply Co. Inc., distributor of electrical supplies, is moving into a new plant at 767 East Pico street, where it will do its own manufacturing. Henry Katz is president.

LOS ANGELES—Supreme Aluminum Foundry, 1645 East Slauson avenue, is a new firm here, established by C. E. Chapman and George Phillips. Company will specialize in aluminum alloy castings for machinery purposes.

LOS ANGELES—Vernon Tool Co. Ltd., H. H. Isaacs president, 2740 East Thirty-seventh street, has leased shops formerly occupied by the General Petroleum Corp. and will manufacture and repair oil well tools and petroleum equipment, including forging, heat treating, plate and structural steel work, and sheet metal work.

LOS ANGELES—Union Pacific railroad, G. J. Adamson chief engineer, Fifteenth and Dodge streets, Omaha, Nebr., has awarded contract to J. V. McNeil Co., 5860 Avalon boulevard, Los Angeles, for a 7-story warehouse at Ninth and Alameda streets. Structure will be 100 x 620 feet and will cost approximately $3,500,000.

SAN DIEGO, CALIF.—Bureau of yards and docks, navy department, Washington, proposes to build a metal aircraft structures shop here.

SAN DIEGO, CALIF.—Barstow Soaring Plane Co. has been organized by Jack Barstow and Robert E. Pollock to manufacture gliders.

SAN FRANCISCO—Trainair Mfg. Co., 1610 Sutter street, is a new concern here engaged in the manufacture of light planes.

SAN FRANCISCO—Quartermaster supply officer, general depot, Fort

Mason, will receive bids Nov. 28 on schedule 928-31-120 for an engine.

SAN FRANCISCO—Board of education will receive bids soon for the construction of a 3-story junior high school at Noe and Twenty-fifth streets. Vocational shops are to be included. Crim, Resing & McGuinness, 488 Pine street, are architects.

SAUSALITO, CALIF.—Italian American Motor Co., 604 Montgomery street, San Francisco, will build a boat and motor plant here at a cost of $40,000. Former bids have been rejected. (Noted Oct. 30.)

VAN NUYS, CALIF.—Commercial Aircraft Co. is about to go into production on a power glider recently tested. R. G. Weygant is production manager and A. B. Green is president.

ASTORIA, OREG.—A. Lindstrom has plans for a 1-story shop for the repair of boats. Cost, with equipment, $20,000.

PENDLETON, OREG.—City council has started development of a municipal airport on a site of 120 acres.

EVERETT, WASH.—Bayside Boat Building Co. has been established by G. Fengler, who plans to build a machine shop.

SEATTLE—Cross Iron Works has been incorporated by F. O. Cross, 3508 Eighth avenue south.

SEATTLE—Duplex Engine Co. has been incorporated with $300,000 capital by Charles A. Wallace, Republic building, to manufacture a recently patented internal combustion engine.

SEATTLE—Bureau of yards and docks, navy department, Washington, will receive bids on specification 6297 until Dec. 3, for a boiler plant unit.

SEATTLE—Puget Sound Power & Light Co. will start work immediately on a hydroelectric project on the Columbia river. Plant will develop 240,000 horsepower.

## Dominion of Canada

FT. WILLIAM, ONT.—Board of education, recently noted as planning a 3-story technical high school, wants prices on complete equipment for machine shops. W. W. Southon is secretary of the board. (Noted Oct. 30.)

TORONTO, ONT.—Safe-T-Turn Ltd. has been incorporated with $10,000 and 30,000 no par shares by Baird Ryckman, 10 Adelaide street east, to manufacture electrical signal appliances and apparatus.

MONTREAL, QUE.—Improved Couplers Ltd. has been incorporated with $25,000 and 25,000 no par shares by John G. Ahern, 112 St. James street, to manufacture and deal in machinery, apparatus and coupling devices.

MONTREAL, QUE.—Hackbridge Transformers Co. of Canada Ltd. has been incorporated with $50,000 capital by John J. Creelman, 215 St. James street west, to carry on the business of engineer and to manufacture machinery.

MOOSE JAW, SASK.—Canadian National railways, J. R. C. Macredie district engineer, has awarded contract to Woodall & Simpson for construction of additions to its roundhouse.

# New Trade Publications

PIPE TOOLS—Nine new or improved tools for pipe work are described in a leaflet by the Borden Co., Warren, O., with illustrations and description of the utilization and advantages of each.

PUMPS—Chicago Pump Co., 2336 Wolfram street, Chicago, has issued a bulletin on its nonclogging pumps for sewage disposal and lift stations. They are of the open-shaft type. It is fully illustrated.

AUTOMATIC MACHINERY—Baird Machine Co., Bridgeport, Conn., manufacturer of automatic machinery, suggests in a current bulletin some of the uses to which its machines may be put in production of duplicate parts automatically with speed and precision.

MACHINERY—A general catalog of its products has been issued by the Traylor Engineering & Mfg. Co., Allentown, Pa., covering its crushing, screening, washing, mining, smelting, refining, concentrating, cement and lime manufacturing machinery. It is well illustrated.

MATERIALS HANDLING—Reduction of expense of handling materials and products is stressed in a bulletin by the Lewis-Shepard Co., Watertown station, Boston. The bulletin shows the use of jacklifts, stackers and steel frame platforms in various industrial plants.

SPEED REDUCERS—Herringbone and helical speed reducers are described and illustrated in a current catalog by the Foote Bros., Gear & Machine Co., Chicago. A new rating method is used for showing horsepowers, inch pounds torque, slow and high speed revolutions per minute.

FORMING AND THREADING—Automatic forming and threading machines manufactured by the Landis Machine Co. Inc., Waynesboro, Pa., are shown in a bulletin now being distributed. It contains details of the various units of these machines, illustrated and with complete description of their action.

STEEL TIES—Bethlehem Steel Co., Bethlehem, Pa., gives detailed description and instructions for use of its steel tie and track fastenings, in a current bulletin. Illustrations go into detail in showing how the rail is fastened to the tie and also the construction of the tie to attain strength and rigidity. Uses where great savings can be made over wood ties are suggested.

AUTOMATIC SHAPE CUTTERS—An automatic shape cutting machine for reproduction of metal shapes is illustrated in a leaflet by the General Welding & Equipment Co., 70 Lansdowne street, Boston. In addition to stationary machines the company shows portable devices to be put directly on the work to cut straight and beveled or curved lines or any shape within their cutting range.

MILLING MACHINES—Cincinnati Milling Machine Co., Cincinnati, has compiled three booklets giving facts on features of various of its machines. One is devoted to its plain and universal cutter grinder, one to its hydromatic miller with locked hydraulic feed and the third to plain and universal and vertical millers. Each is illustrated and gives detailed description and illustrations of the machines.

VANADIUM AND MOLYBDENUM—Two booklets have been issued by High Speed Steel Alloys Ltd., Ditton Road, Widnes, Lancashire, Eng., dealing with molybdenum in steel and iron and vanadium in steel. The company is a combination of 31 makers of high speed steel to supply their requirements of tungsten, which has been expanded to supply other materials used in the production of high speed steels.

BAND SAWS—Band saws for cutting all materials, with special emphasis on those made especially for use on metals, are the subject of a leaflet by the Saw & Knife Specialty Co., 1375 East Thirty-third street, Cleveland. An interesting illustration shows a saw after being thrown from the wheel in an autobody plant without being cracked, a remarkable test. Tables show dimensions and prices of various grades of metal and wood saws.

STEEL PRODUCTS—Alan Wood Steel Co., Conshohocken, Pa., combines in its new catalog a sketch of the origin and growth of the company, a statement of its plants and products and descriptions and illustrations of various specialties. These include diamond and diamondette steel floor plates, stair and traffic treads, sheared plates, blue annealed sheets and light plates, billets, blooms, slabs, pig iron and coke. Illustrations include diagrams of the various floor plates, typical installations and layouts for special applications.

PRECISION GRINDERS—Grinding equipment manufactured by the Churchill Machine Tool Co. Ltd., Broadheath, near Manchester, Eng., is described in several leaflets and booklets recently issued by this company. A booklet is devoted to precision grinding in the railroad shop, illustrations showing various processes applicable to the building and maintenance of locomotives. Leaflets describe an open-sided surface grinding machine, a brake drum grinding machine, crankshaft regrinding machine and tramway wheel tire grinding machine.